Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

SECURITY AND CONTINUITY OF OPERATIONS

August 20, 2013

In reply refer to: NN-1

Joseph Bogaard
Save Our Wild Salmon
200 First Ave, West #107
Seattle, WA 98119

FOIA #BPA-2013-01327-F

Dear Mr. Bogaard:

This is the final response to your request for records that you made to the Bonneville Power Administration (BPA), under the Freedom of Information Act (FOIA), 5 U.S.C. 552.

You requested the following:
"analyses from the last 4 months (April, May, June and July 2013) that provide information and reflect analyses and conclusions by and/or for BPA regarding the anticipated "costs" and/or revenue impacts as a result of providing "salmon spill" at these various levels: 2008/2010 biop level; court-ordered levels, 115% TDG; 120% TDG, 125% TDG, and 130% TDG, if available.

I would like to see working copies or drafts of any documents/reports/memos as well, and emails that discuss these analyses."

Response:
BPA is releasing the enclosed documents with some information withheld under Exemption 6 of the FOIA.

BPA asserts this exemption for information which could reasonably be expected to constitute an unwarranted invasion of personal privacy if disclosed. The withheld information consists of the contact information (email and cell phone numbers) of individuals. There is no public interest in the disclosure of this information because it does not shed any light on how BPA has performed its statutory duties.

Pursuant to 10 CFR 1004.8, if you are dissatisfied with this determination, or the adequacy of the search, you may appeal in writing within 30 calendar days of receipt of a final response letter. The appeal should be made to the Director, Office of Hearings and Appeals, HG-1, Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585-1615. The written appeal, including the envelope, must clearly indicate that a FOIA Appeal is being made.

If you have any questions relating to this request, please contact Kim Winn, FOIA/Privacy Act Specialist, at 503-230-7305.

Sincerely,

For/s/Paul F. Mautner
Christina J. Munro
Freedom of Information/Privacy Act Officer

Enclosure: CD

From: Harwood,Holly C (BPA) - TEP-TPP-3
Sent: Wednesday, July 17, 2013 5:07 PM
To: Fodrea,Kimberly A (BPA) - PGPR-5; Bodi,Lorri (BPA) - KE-4
Cc: Oliver,Stephen R (BPA) - PG-5; Delwiche,Gregory K (BPA) - P-6
Subject: RE: Spill in excess of the 115/120% Biop reqt

Thanks Kim. Greg, looks like this gives you all that you requested and more. I had understood we were not going to analyze 125%, but Kim had a different understanding and so she developed a rough estimate. I would only offer a couple of suggested edits in red below.

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Wednesday, July 17, 2013 4:33 PM
To: Harwood,Holly C (BPA) - TEP-TPP-3
Cc: Oliver,Stephen R (BPA) - PG-5; Delwiche,Gregory K (BPA) - P-6
Subject: FW: Spill in excess of the 115/120% Biop reqt

Holly, Sorry for being so busy today (Treaty studies). I was hoping we could meet this afternoon, but you may have already left for the day. Anyway, I have better estimates to use, so we can simplify Greg's statement and avoid saying we had to infer our numbers from other studies, avoid all your explanation about the 60% estimates (sorry you already spent time on that!). Here's my suggested language including all the necessary numbers:

BPA estimates that spilling at the federal projects for fish passage to a 125% gas standard would reduce federal hydropower production by roughly 800 aMW (300-1100 aMW) and reduce revenues by roughly $200 million ($100-250 M) annually, which would translate to a BPA wholesale rate increase of about 9 percent (5 to 12 percent). If this lost energy production was offset with natural gas-fired combined cycle combustion turbines, the region's greenhouse gas production would increase by 1-4 million tons of CO2 annually, which is equivalent to the emissions associated with an additional 500,000 (200,000-700,000) vehicles on the road. Alternatively, spilling to current gas caps would also cause a substantial energy loss of roughly 400 aMW (200-600 aMW) and revenue loss of roughly $100 million ($50-150 M) annually, which translates to a potential rate increase of about 5 percent (2-7 percent).

In addition, there would be similarly large impacts to hydropower production at the non-federal dams on the mid-Columbia.

I added that last sentence even though it wasn't included in Greg's request, because I had the numbers and I think you'll want that. My calendar is much more open tomorrow if you'd like to talk.
Thanks, -Kim

From: Delwiche,Gregory K (BPA) - P-6
Sent: Tuesday, July 16, 2013 11:48 AM
To: Harwood,Holly C (BPA) - TEP-TPP-3; Oliver,Stephen R (BPA) - PG-5; Bodi,Lorri (BPA) - KE-4
Cc: Fodrea,Kimberly A (BPA) - PGPR-5; Klumpp,Elizabeth C (BPA) - DKR-WSGL
Subject: Spill in excess of the 115/120% Biop reqt

All – I spoke with SteveO, LorriB and HollyH about the request for information that came from Liz Klumpp Friday afternoon, and the agreed upon gameplan for reponse is to deliver to Liz a one-pager addressing three areas – biology, economics and climate change implications. I wrote a short strawman paragraph (see below) outlining the level of information that I think would sufficiently explain the economics and GHG issues at a high level, with wordsmithing/suggestions welcome, and Holly has the 'pen' for filling in the blanks and confirming that the $$$ are generally in the right zone. Lorri's staff will write the biological section. For now, Lorri should be the POC. Let's shoot for getting this done by Thursday.

Liz- does this approach meet the need???

"While BPA has not conducted a detailed study to evaluate the effect of changing fish passage spill at FCRPS dams to a 125% TDG limit, BPA has previously run analyses of alternative spill regimes, such as managing spill to the State of Oregon's 120% gas cap, and from these studies can generally infer that managing fish passage spill to a 125% standard would reduce federal hydropower production by roughly $75 to $150M or more, which would translate to a BPA wholesale rate effect of 4 to at least 7 percent. In addition, there would be similarly large impacts to hydropower production at the non-federal dams on the mid-Columbia. If the reduction in federal energy production (from a 125% spill regime) was offset with electricity production from natural gas-fired combined cycle combustion turbines, the region's greenhouse gas production would increase by XXX tons of CO2 annually, which is equivalent to the emissions associated with an additional YYY vehicles on the road. "

Impacts of Reduced Generation

DRAFT!

	Reduced Generation	Reduced Secondary Revenue	Rate Increase	Increased Carbon Emissions ~800lb/MWhr (NPCC 2008)	Greenhouse Gas Equivalent ~4.8 metric tons of CO2/car/year (EPA 2012)
Spill above BiOp to Current Gas Caps	400aMW (range: 200-600aMW)	$100 million (range: $50-$150M)	5% (range: 2-7%)	1.3 million metric tons (range: 0.6-1.9 MMT)	Additional 250,000 cars on the road (125,000-400,000)
Spill above BiOp to 125% Gas Caps	800aMW (range: 300-1100aMW)	$200 million (range: $100-$250M)	9% (range: 5-12%)	2.5 million metric tons (range: 1-3.5 MMT)	Additional 500,000 cars on the road (200,000-700,000)

- Estimates are approximate annual averages, and ranges reflect variability of runoff.
- Cost of reduced capacity and cost of replacing 500 aMW of firm energy resources are not included.
- Ability of the hydro system to carry required power system reserves and integrate variable resources (wind) would be .
- Effects on non-federal mid-Columbia projects are not included.

DRAFT July 2013

Impacts of Reduced Generation

	Reduced generation	Reduced revenue	Rate increase above rate case	Increased carbon emissions*
Spill above BiOp to gas caps	400aMW (range: 200-600aMW)	$100 million (range: $50-$150M)	5% (range: 2-7%)	1.3 million metric tons (range: 0.6-1.9 MMT)
Spill above BiOp to 125% standard	800aMW (range: 300-1100aMW)	$200 million (range: $100-$250M)	9% (range: 5-12%)	2.5 million metric tons (range: 1-3.5 MMT)

(Note: Figures are approximate annual estimates. Range reflects variability of runoff and other conditions.)

*Increased emissions associated with spilling 125% across the system equates to approximately another 500,000 vehicles (range: 200,000-700,000 vehicles) on the road.

From: "Fodrea,Kimberly A (BPA) - PGPR-5" <BPA/BPASite1/Recipients/KAF5624>
To: "Harwood,Holly C (BPA) - TEP-TPP-3" <hcharwood@bpa.gov>
Subject: RE: Urgent question
Sent: 6/5/2013 9:18:45 PM +00:00

Holly, Here are some estimates. I added option C based on our discussion earlier today. I hope that's helpful. I would normally round these to $1 million, but since you're debating between these options I thought I better give more detail. I used 28kcfs for the gas cap, but like you already said, it won't make much difference between 27 & 28kcfs.

Gas cap June 1-20, then 17 kcfs June 21-Aug 31

Gas cap June 1-4, 21 kcfs June 5-Aug 31 ← this costs ~**$700k** more than A

Gas cap Jun 1-20, then 21 kcfs June 21-Aug 31 ← this costs ~**$900k** more than A

These estimates are averages using BP14 AURORA prices. They would be higher if not for about 60% of years in June having forced spill and about 60% of years in August running on minimum turbine flow. Also, FYI, most of the difference occurs in July when we're not likely to have forced spill or be limited by the min turbine flow.

Let me know if you need anything else. Thanks, -Kim

From: Harwood,Holly C (BPA) - TEP-TPP-3
Sent: Wednesday, June 05, 2013 11:19 AM
To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: Urgent question

For LMN, can you evaluate the difference between: Gas Cap through 6/20 then 17 kcfs vs. 21 kcfs for the full summer period (using whatever date you used in the BiOp study for start of summer spill). On an average basis.

This would be useful to know for today's RIOG discussion.

Holly Harwood

Bonneville Power Administration

hcharwood@bpa.gov

360 619-6712 (Vancouver)

503 230-3758 (Portland)

From: "Fodrea,Kimberly A (BPA) - PGPR-5" <BPA/BPASite1/Recipients/KAF5624>
To:
1. "Harwood,Holly C (BPA) - TEP-TPP-3" <hcharwood@bpa.gov>
2. "Lut,Agnes (BPA) - KEWR-4" <axlut@bpa.gov>

CC: "Milstein,Michael C (BPA) - KE-4" <mcmilstein@bpa.gov>
Subject: RE: FPC memo
Sent: 7/20/2013 12:46:57 AM +00:00

Regarding the spill caps, we did not use the old SYSTDG number if that's what you think. The gas cap numbers used in my rough analysis would match theirs almost exactly, because they are based on last year's actual spill priority lists.

Regarding their language about cost—it all sounds very awkward and confusing, but I believe they're trying to say the right thing. I wouldn't want to try to reword it or say something about it in our slide, because that will just sound like we did something new, different, or are disagreeing with them. Also, the more we try to explain our estimate the more it will sound like a detailed analysis, which seems to still be a concern. -K

From: Harwood,Holly C (BPA) - TEP-TPP-3
Sent: Friday, July 19, 2013 4:32 PM
To: Lut,Agnes (BPA) - KEWR-4; Fodrea,Kimberly A (BPA) - PGPR-5
Cc: Milstein,Michael C (BPA) - KE-4
Subject: FPC memo

Agnes and Kim,

I'm looking at the memo that addresses the technical issues Agnes discussed with the FPC, DOE and DEQ (attached).

In the memo they say:

" In the AMT process, the Fish Passage Center (FPC) relied on empirical data to develop the spill caps, while in the CSS analysis the spill caps used were developed by the Corps of Engineers (COE) for the real time distribution of excess-generation spill at specific TDG levels using the SYSTDG model, and represent the most current hydrosystem configuration. The most recent spill caps are the result of spill and

dissolved gas modeling by the COE, which has been refined since the 2008 AMT process.

Later in the document they say that they used the spill caps from a certain date for their analysis:

"The spill caps that were used in the CSS analysis were taken from the COE's Spill Priority List (prepared 4/11/12) for the distribution of lack of market (excess generation) spill."

Kim, I know we use some spill cap assumption in our modeling which I think is based on the SYSTDG modeling, but is not from one day but rather intended to reflect the average condition or something. It would be good for us to get some clarity on that and I'd be interested in your thoughts about what they say they are using for modeling.

There is also a lot of talk in their memo about their analysis of the economics. I did not realize that the FPC did economic analysis. For example they say:

In prospective modeling the FPC considers excess generation spill an economic factor. The cost of a spill alternative is determined by the "immediate" dollar amount that can be applied to foregone energy. If all the generated power could be sold, but spill precludes the sale of a portion of the water, then the cost is in terms of that amount of foregone energy. If excess generation spill is present in the system and can be used to meet the spill levels without forgoing any sellable energy, then the spill does not cost anything in terms of forgone energy production.

And

The experimental spill scenario simulations assume that spill is **guaranteed** to occur under all flow conditions and can include excess

generation spill or excess hydraulic capacity spill to the extent that it is available, decreasing the cost.

Do you think we should include in our write-up for smart spill (and maybe in the talking points for the slides) some clarity that when we analyze the cost of these proposed "experimental spill scenarios" we only consider the incremental costs above the levels we estimate will be spilled due to lack of market or lack of turbine spill? I'm not sure people get that and I think that is important for people to understand.

Also, I notice that they say:

The emphasis of the CSS spill experimental management is to demonstrate the ability to meet regional fish survival goals under a range of alternative "managed" spill programs. These alternatives are "risk based" and are limited to the 125% dissolved gas level, which can be implemented without exceeding the gas bubble trauma criteria established by NOAA and used for present management.

Any ideal what they are referencing when they say 125% is the "gas bubble trauma criteria established by NOAA and used for present management"?

I'm thinking that we may want to add in our materials that 120% is the limit according to NOAA, perhaps with a copy of the Will Stelle letter.

Have a good weekend!

Holly

Holly Harwood

Bonneville Power Administration

hcharwood@bpa.gov

360 619-6712 (Vancouver)

503 230-3758 (Portland)

From: "Delwiche,Gregory K (BPA) - P-6" <BPA/BPASITE1/RECIPIENTS/GKD6690>

To:
1. "Fodrea,Kimberly A (BPA) - PGPR-5" <kafodrea@bpa.gov>
2. "Kerns,Steven R (BPA) - PGSP-5" <srkerns@bpa.gov>
3. "Connolly,Kieran P (BPA) - PGS-5" <kpconnolly@bpa.gov>
4. "Oliver,Stephen R (BPA) - PG-5" <sroliver@bpa.gov>
5. "Cogswell,Peter (BPA) - DK-7" <ptcogswell@bpa.gov>
6. "Bartlett,Kristine L (BPA) - PGSP-5" <klbartlett@bpa.gov>
7. "Harwood,Holly C (BPA) - TEP-TPP-3" <hcharwood@bpa.gov>

Subject: Re: Council Analysis on 125% TDG Spill Scenario

Sent: 7/22/2013 11:48:37 PM +00:00

Well, that makes me feel better; wasn't your spring-only estimate in the same zone?

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Monday, July 22, 2013 04:40 PM Pacific Standard Time
To: Delwiche,Gregory K (BPA) - P-6; Kerns,Steven R (BPA) - PGSP-5; Connolly,Kieran P (BPA) - PGS-5; Oliver,Stephen R (BPA) - PG-5; Cogswell,Peter (BPA) - DK-7; Bartlett,Kristine L (BPA) - PGSP-5; Harwood,Holly C (BPA) - TEP-TPP-3
Subject: RE: Council Analysis on 125% TDG Spill Scenario

I just spoke with John Fazio, and his analysis only spilled to the gas cap during the spring through Jun 20th. So, his estimate does not include summer spill to the 125% gas cap. His spill input came from Jim Ruff, and Jim's understanding is that this would only be a spring operation.
-K

From: Delwiche,Gregory K (BPA) - P-6
Sent: Monday, July 22, 2013 3:46 PM
To: Kerns,Steven R (BPA) - PGSP-5; Connolly,Kieran P (BPA) - PGS-5; Oliver,Stephen R (BPA) - PG-5; Cogswell,Peter (BPA) - DK-7; Bartlett,Kristine L (BPA) - PGSP-5; Fodrea,Kimberly A (BPA) - PGPR-5
Subject: Re: Council Analysis on 125% TDG Spill Scenario

I suggest that our team (some combo of Kim, Kristine, Holly, and/or SteveK) contact John soon to reconcile differences between our estimate (which is much larger) and his.

Peter - we should think thru NPPC mgt on this issue, as Fazio's estimate will undermine the substance of the conversation LizK is having with the Gov's office and similarly with Oregon per a conv I had with Crystal last Weds.

From: Kerns,Steven R (BPA) - PGSP-5
Sent: Monday, July 22, 2013 03:17 PM Pacific Standard Time
To: Connolly,Kieran P (BPA) - PGS-5; Oliver,Stephen R (BPA) - PG-5; Delwiche,Gregory K (BPA) - P-6
Subject: FW: Council Analysis on 125% TDG Spill Scenario

FYI

Steve Kerns
Manager, Short Term Planning
Bonneville Power Administration
(503) 230-7542
srkerns@bpa.gov

From: Bartlett,Kristine L (BPA) - PGSP-5
Sent: Monday, July 22, 2013 3:09 PM
To: Harwood,Holly C (BPA) - TEP-TPP-3
Cc: Fodrea,Kimberly A (BPA) - PGPR-5; Kerns,Steven R (BPA) - PGSP-5
Subject: Council Analysis on 125% TDG Spill Scenario

Just wanted to give you a heads up on a conversation I had with John Fazio this afternoon about an analysis that he is performing for the Council. He is planning on presenting the results of the analysis at an August Council meeting.

There were two parts to his analysis. A lost revenue piece and a savings from less oversupply. For the lost revenue piece, he ran the Genesis model to calculate the loss in MW's when going to 125% spill vs. the Court Ordered Spill. He then used a price set that seemed dated (it sounded like it was from a 70 year BiOp run a couple years ago that BPA shared with him) to come up with a delta in revenues of $77 million on average.

For the oversupply savings piece he again ran Genesis with 125% vs. Court Ordered Spill and took the delta in oversupply MW and multiplied those by $10 (this was the low end of negative marginal price that they got from their Aurora model during oversupply conditions). This amounted to a savings on average of $7 million.

So the net of the loss in revenue and savings from oversupply was $70 million.

We will try to stay plugged into what he is doing but just wanted to give you heads up about his studies. Let me know if you have any questions. Kristine

From: "Fodrea,Kimberly A (BPA) - PGPR-5"
To: "Bliven,Raymond D (BPA) - PSR-6" <rdbliven@bpa.gov>
Subject: RE: rough estimates for Delwiche
Sent: 7/17/2013 8:25:44 PM +00:00

Okay, thanks— I think I've got everything I need now. -K

From: Bliven,Raymond D (BPA) - PSR-6
Sent: Wednesday, July 17, 2013 12:54 PM
To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: RE: rough estimates for Delwiche

We would need 73% of 500 more augmentation until the next rate case. Then the lost energy reduces the customers Tier 1 amounts.

The answers to your rate effects to divide the dollars by $22 million per 1 percent, so $75 to $150 million would be 3.4 to 6.8 percent; $50 million would be 2.3 percent; and $100 to $250 million would be 4.5 to 11.4 percent.

Because these numbers are pre-Slice, they affect the overall value received by our power customers differently. Non-Slice customers would see the impact through the BPA rate and Slice customers through a lower amount of power delivered from BPA, thus increasing their costs. The same is true for all customers for the firm energy loss, even thought he loss would not be conveyed through a BPA rate increase, they would get less firm power from BPA, thereby increasing their costs as if BPA bought the replacement power and increased their rate.

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Wednesday, July 17, 2013 12:42 PM
To: Bliven,Raymond D (BPA) - PSR-6
Subject: RE: rough estimates for Delwiche

These numbers are pre-slice, ie I did not reduce them by the slice share.

I'm not sure what you mean in your second question, but I guess we would assume we need 500aMW more augmentation. -K

From: Bliven,Raymond D (BPA) - PSR-6
Sent: Wednesday, July 17, 2013 12:40 PM

To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: RE: rough estimates for Delwiche

Next question are the secondary losses pre-Slice or post-Slice?

And what are you doing with the lost 500aMW firm loss?

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Wednesday, July 17, 2013 12:19 PM
To: Bliven,Raymond D (BPA) - PSR-6
Subject: RE: rough estimates for Delwiche

Those $ estimates are secondary revenue losses. Firm energy loss is ~ to 500 aMW. -K

From: Bliven,Raymond D (BPA) - PSR-6
Sent: Wednesday, July 17, 2013 11:51 AM
To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: RE: rough estimates for Delwiche

Okay, so a bit more info. Is the lost production firm or sercondary?

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Tuesday, July 16, 2013 6:05 PM
To: Bliven,Raymond D (BPA) - PSR-6
Subject: rough estimates for Delwiche

Hi Ray, I'm working on a few rough spill cost estimates for Greg, and he also wants to be able to provide a rough rate effect. Here's the example sentence he provided... This increased spill (paraphrased) "...would reduce federal hydropower production by roughly $75 to $150M or more, which would translate to a BPA wholesale rate effect of 4 to at least 7 percent." So, that gives you a rough sense of his expectations for a rate effect. I'm still reviewing my numbers, but hopefully they won't move too much. Could you fill in the blanks for me here on these two scenarios below? Or please let me know if I should ask someone else.

This increased spill to 115/120% gas caps would reduce federal hydropower production by roughly $50 to $150M, which would translate to a BPA wholesale rate effect of ??? to at least ??? percent.

This increased spill to 125% gas caps would reduce federal hydropower production by roughly $100 to $250M, which would translate to a BPA wholesale rate effect of ??? to at least ??? percent.

I'm trying to get this done by COB Wednesday. Thanks, -Kim x3702

From: "Fodrea,Kimberly A (BPA) - PGPR-5"

To: "Lut,Agnes (BPA) - KEWR-4" <axlut@bpa.gov>
Subject: RE: Green House Gas question
Sent: 6/24/2013 11:51:16 PM +00:00

The last we talked, I was going to run studies spilling the current planned amounts but with higher gas caps. For instance, now we have 40% spill at the The Dalles limited by the 115/120 gas cap, and that's already in our main base/Rate Case study. So, I am running a study to look at 40% spill up to the 120 gas cap and then another study with 40% spill up to the 125 gas cap.

However, if you want to forget about the 40% spill and just spill to the different gas caps, that's different. I was not planning to run those studies. Is that what you're saying Lorri wants now?

I'm also rerunning the 60% studies to make sure they are consistent with the newer studies. Those 60% estimates below were based on an older study and the spill priority list changed since then. Hopefully it won't make a difference, but I just need to make sure. -K

From: Lut,Agnes (BPA) - KEWR-4
Sent: Monday, June 24, 2013 4:25 PM
To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: RE: Green House Gas question

Kim

A clarifying point, Lorri would like to see not the 60% spill, but spill to 115/120, 120, and 125.

Does that make sense as you work on this?

The same data would be provided but not upto 60% spill.

Thanks...

a-

From: Fodrea,Kimberly A (BPA) - PGPR-5
Sent: Monday, June 24, 2013 3:09 PM

To: Lut,Agnes (BPA) - KEWR-4
Subject: RE: Green House Gas question

Yes, we can also estimate carbon emissions assuming the lost hydropower would be replaced by natural gas resources. I'm working on these studies again today— Sorry it's taking so long, but it's hard moving back and forth between this and the Rate Case and Treaty studies. -K

From: Lut,Agnes (BPA) - KEWR-4
Sent: Monday, June 24, 2013 1:29 PM
To: Fodrea,Kimberly A (BPA) - PGPR-5
Subject: Green House Gas question

Kim

When you were providing us this cost data, below, are you also able to provide us with information on what the impact would be from a Green House Gas perspective?

1. **The "more spill" study proposal has substantial power and GHG implications**

   The following is an initial summary from Power staff of the incremental cost of increasing spill operations:

- 60% spill April-August at our 8 mainstem projects and the 5 mid-C projects with our current gas cap assumptions (115/120)
  - Federal Spring $ 30 M ($0-60 M) Summer $ 45 M ($20-60 M)
  - Mid-C Spring $ 15 M ($0-30 M) Summer $ 25 M ($0-40 M)
  - Total Spring $ 45 M ($0-90 M) Summer $ 70 M ($30-90 M)
- 60% spill at all those projects and higher gas caps (120, no forebay limit)
  - Federal Spring $ 35 M ($0-70 M) Summer $ 45 M ($20-60 M)
  - Mid-C Spring $ 15 M ($0-30 M) Summer $ 30 M ($10-50 M)
  - Total Spring $ 50 M ($0-100 M) Summer $ 75 M ($40-100 M)

- 60% spill at all those projects and remove the gas caps
    - Federal Spring $ 70 M ($20-90 M) Summer $ 60 M ($30-90 M)
    - Mid-C Spring $ 45 M ($10-70 M) Summer $ 75 M ($50-90 M)
    - Total Spring $115 M ($30-160 M) Summer $ 135 M ($90-180 M)

Add GHG

Agnes Lut

Fish Biologist, Hydro Team - Policy and Planning

Bonneville Power Administration, KEWR-4

905 NE 11th Ave, Portland, OR 97232

Ph: 503-230-5651

Ex 6

axlut@bpa.gov

From: "Petty,Robert J (BPA) - PB-6" <BPA/BPASITE1/RECIPIENTS/RJP9614>

To:
1. "Weiss,Steven D (BPA) - DKR-7" <sdweiss@bpa.gov>
2. "Cogswell,Peter (BPA) - DKR-7" <ptcogswell@bpa.gov>
3. "Marker,Douglas R (BPA) - DK-7" <drmarker@bpa.gov>

Subject: Re: Spill levels in Treaty, Resource Program and Rate Case

Sent: 5/7/2013 3:47:08 PM +00:00

Steve, please be careful of ex parte.

rob.

From: Weiss,Steven D (BPA) - DKR-7
Sent: Tuesday, May 07, 2013 08:36 AM
To: Petty,Robert J (BPA) - PB-6; Cogswell,Peter (BPA) - DKR-7; Zimmer,Pat R (BPA) - DKR-7; McNary,Sarah R (BPA) - A-7; Marker,Douglas R (BPA) - DK-7
Subject: Spill levels in Treaty, Resource Program and Rate Case

Everyone – after discussing all this with Doug Marker, he thought I should call Sara Patton and Gilly Lyons to give them a short answer. I called them with these points:

- We are using 2008 BiOp spill levels for the three analyses: CRT, Resource Program and Rate Case.
- A rough estimate between those levels and the court-ordered injunction levels is about 100 aMW, with a cost difference of perhaps $20-$30 M annually depending on water conditions and market prices.
- This decision was based upon thorough discussion in the federal family with a final decision at the executive level. The rationale being those points made by Birgit by e-mail (below).

Their immediate response was somewhat negative. Essentially they remarked that using this spill level distorted analysis in all three areas.

For the Treaty, it makes the eco-scenarios appear more expensive, since they are starting from a baseline that is not occurring (and is not legal). For the resource program, it makes it appear BPA has more resources than it actually has. They pointed out that 100 aMW is a years' worth of conservation programs and implied that our EE target and other resource needs should be higher, since we should not assume that amount of generation is available (especially in late summer.) Finally, for the ratecase, they noted that $20-30 million represents something like a 1.5% rate impact that would not be collected. They wondered if the fish CRAC would be used to collect the revenue if, as they expect, the judge continues the court-ordered spill levels through the rate period. (I was not familiar enough with the fish CRAC triggering mechanism, and said I'd get back to them on that.)

Steve Weiss
Constituent Account Executive for Public Interest Groups
503-230-5970 - office;

Ex 6

From: Petty,Robert J (BPA) - PB-6
Sent: Tuesday, May 07, 2013 8:04 AM
To: Weiss,Steven D (BPA) - DKR-7; Ko,Tina G (BPA) - PGPR-5; Cogswell,Peter (BPA) - DKR-7
Subject: Re: Spill levels in Treaty, Resource Program and Rate Case

Steve, I might add that the Resource (and think the White Book) calls out specifically that the spill would be around 400 aMW lost generating capability in the second half of August. I'm not sure if you need this level of detail for this request but it was important to Greg D to call this out in the documents.

rob.

From: Weiss,Steven D (BPA) - DKR-7
Sent: Monday, May 06, 2013 04:00 PM
To: Cogswell,Peter (BPA) - DKR-7; Marker,Douglas R (BPA) - DK-7; Zimmer,Pat R (BPA) - DKR-7; Petty,Robert J (BPA) - PB-6; Harwood,Holly C (BPA) - TEP-TPP-3; Ko,Tina G (BPA) - PGPR-5
Cc: McNary,Sarah R (BPA) - A-7; Stephan,Nancy L (BPA) - PGP-5; Koehler,Birgit G (BPA) - PGPL-5; Fodrea,Kimberly A (BPA) - PGPR-5
Subject: Spill levels in Treaty, Resource Program and Rate Case

Thank to all of you who got back to me so quickly. Here is the summary of what I found out, plus Birgit provided some rationale, below.

Basically the answer is that yes, we are using 2008 BiOp spill levels for the Treaty, Resource Program and rate case studies, not the court-ordered spill levels. Kim Fodrea estimates (back of the envelope) that the difference is less than 100 aMW. Depends on water conditions, of course. Given today's prices, that's about $20-30 million (lots of the spill is in the spring when prices are low.) She said that this decision was debated

thoroughly by the federal family and a decision made at the Steve Wright level.

Steve Weiss
Constituent Account Executive for Public Interest Groups
503-230-5970 - office;

Ex 6

From: Koehler,Birgit G (BPA) - PGPL-5
Sent: Monday, May 06, 2013 3:46 PM
To: Weiss,Steven D (BPA) - DKR-7
Cc: McNary,Sarah R (BPA) - A-7; Stephan,Nancy L (BPA) - PGP-5
Subject: Steve's voicemail about spill assumptions in the Treaty review

Steve,

Scott forwarded me your voicemail regarding Sara Patton and Gilly Lyons (SOWS) asking about the spill we used in the Treaty Studies. I am answering in writing so I can cc Sarah McNary, but feel free to call me if you want to talk.

I am writing to confirm that we used the 2008 BiOp spill levels in the studies, not the court-ordered spill levels. The main reasons are

The U.S. Entity believes the 2008 BiOp spill levels to be scientifically supported.

These are the spill levels we use in our rate cases

We are still in court proceedings affirming our belief that these are the right levels to use

These spill levels were supported by Tribes and 3 states in the fish accords

And on a side-note, for comparative purposes between different Treaty alternatives,

the differences are not likely to change any of our conclusions.

Again, feel free to call me if you'd like to discuss.

Birgit

X4249

From: "Weiss,Steven D (BPA) - DKR-7"

To: 'Gilly Lyons' Ex 6

Subject: RE: Spill levels in our resource program

Sent: 5/15/2013 11:47:30 PM +00:00

OK, be careful with the units. An average MW (aMW) is a peculiar energy unit only used in the NW. Everywhere else they use MW-hrs. An aMW is kind of a loosy-goosy term that is only meaningful if you're sure of the context, especially the length of time it's covering. It means a MW of power (sometimes called "capacity"), an instantaneous term analogous to miles per hour. Miles per hour doesn't tell you how far you've gone, unless you know how many hours you've been travelling at that speed. Similarly, one MW for one hour is equal to one MW-hr, which is a unit of energy, not capacity (power). MWs (capacity) is a measure of how much energy you're producing in an instant of time. aMW, or MW-hours is a measure of how much energy you'd produce if you generate them much over a period of time.

An aMW is generally understood to be one MW over a whole year, or 8760 hours. That means one aMW = 8,760 MW-hours. It's also called a MW-year, but this term isn't used as much.

That all seems to make sense, I imagine. So the 100 aMW difference between the two spill regimes means 876,000 MWhrs of difference in energy produced. **However,** this is where you have to be careful. You can also just average the MW over one month (or a week or a day). This is usually, and most accurately called a MW-month or MW-week or MW-day. So a MW-day is 24 MWhrs. Mostly, people who say an aMW mean a MW-year. But if the *context* is for a month, an aMW is really a MW-month, or 730 MW-hours.

So, the context in the quotes below means they're talking about a month, not a year. 400 aMW over a month is really only 400/12 = 33.3 aMW, since it only lasts a month. To get to 100 aMW (over a year) total, means the spill difference in May is double that, or 66.7 MW-months, or 67 aMW *for May*. Adding up May and August, you get 100 aMW for the year.

Please call me if you're still confused. Best phone number is Ex 6

Steven Weiss

Constituent Account Exec. for the Public Interest Groups

503-230-5970

Ex 6

From: Gilly Lyons Ex 6
Sent: Wednesday, May 15, 2013 3:16 PM
To: Weiss,Steven D (BPA) - DKR-7
Subject: Re: Spill levels in our resource program

Steve, thanks so much for this. I had a quick question for you. I think you or someone recently described the difference between 2008 BiOp spill levels and court-ordered spill as about 100aMW. How does the 400aMW mentioned below fit in with those calculations? Or maybe the 400aMW loss connects to something else? Is there a distinction between loss of generating capacity and loss of actual power? I should probably know that. :)

Thank you, Steve!

G.

On May 15, 2013, at 1:49 PM, Weiss,Steven D (BPA) - DKR-7 wrote:

Sara, Gilly and Joseph – We will be getting a detailed response to your note to Bill Drummond soon. However, I did want to refer you to something in our resource program that touches on the subject.

Executive Summary, page V

- Monitor factors that could reduce the capability or output of the FCRPS.

Needs Assessment, Pages 28-29

Under the expected case, modest annual energy deficits are projected under critical water. However, in the high economy and low economy load scenarios, there is a wide range of uncertainty in the load obligations forecast, and the deficits could be erased or become significantly higher. There are also significant deficits (both heavy load hour and all hours) in several of the 10th percentile months, notably January and February (winter) and the second half of August and September (summer). These deficits would be larger if the FCRPS were to lose any current generating capability. For example, the 2012 Needs Assessment assumes 2008 BiOp hydro operation requirements, which, based on an average of historical fish migration at the Snake River dams, typically ends juvenile bypass spill by mid-August. If spill were required through the end of August, the additional spill would correspond to a loss of about 400 aMW of generating capability in the second half of August under all water conditions.

Resource Assessment Conclusions, Page 60

The green bars in Figure 5-1 reflect achievement of the incremental amount of conservation to meet the Sixth Power Plan conservation targets. As discussed in Chapters 3 and 4, roughly 60 aMW of conservation is already included in the load forecasts. The conservation amounts are assumed to have monthly shapes that are consistent with those in the Sixth Power Plan. Conservation does not appear on the charts in the months in which BPA does not project deficits. The gray bars reflect the reliance on market purchases up to the market threshold limits. Any remaining amount of the needs not met is shown in yellow. As the figure suggests, there are only very minor needs left in January and September. It is anticipated that these remaining small deficits can be managed using market purchases above those assumed in the studies. As noted earlier, the hydro modeling uses BiOp spill assumptions. In years where fish migration continues later than normal, spill may continue through the end of August and lead to higher second half of August deficits (up to 400 aMW less generating capability). This applies to FY 2021 as well. Figure 5-2 reflects the results for FY 2021.

Steven Weiss

Constituent Account Exec. for the Public Interest Groups

503-230-5970

Ex 6

From: Joseph Bogaard Ex 6

To:
1. "Weiss,Steven D (BPA) - DKR-7" <sdweiss@bpa.gov>
2. gilly Ex 6
3. 'Sara Patton Ex 6

Subject: Re: Error in dollar amount between court-ordered and 2008 proposed biop spill

Sent: 5/21/2013 3:02:37 PM +00:00

Thanks Steve for the followup. Very helpful.
JB

On 5/21/13 7:59 AM, "Weiss,Steven D (BPA) - DKR-7" <sdweiss@bpa.gov> wrote:
Gilly, Sara and Joseph. In a previous e-mail I gave you an estimate of the value on the market of the spill difference between the proposed 2008 biop spill and the actual court-ordered spill levels as $20-30 M per year. It turns out that in the ratecase, we estimated that amount as more like $15 million. Since much of the spill is during May when prices are low, that makes some sense. That averages out to be around $20/MWh.

Steven Weiss
Constituent Account Exec. for the Public Interest Groups
503-230-5970

Ex 6

From: "Weiss,Steven D (BPA) - DKR-7"

To: Gilly Lyons Ex 6

CC:
1. Joseph Bogaard Ex 6
2. Sara Patton Ex 6

Subject: RE2: Rate case and BiOp spill levels

Sent: 5/13/2013 3:19:14 PM +00:00

Actually, I forgot to note the biggest effect on market prices is gas prices. They've been very low for the past year and a half, but are coming back up. The rate case assumptions depend on that price as an important factor in estimating our secondary sales revenues. The assumptions of secondary revenues determines the rates we must charge our utilities. The final assumption on market prices to calculate the rates is inserted at the last minute into the rates as part of the ratecase process.

If prices are high in the market, we make more money, so rates are lower, but then the monetary difference between injunctive spill and biop spill is larger. It's an inverse perception problem that exists on the "cost" of foregone revenue from spill. When market prices are high, BPA does well and rates are low (or reserves build up). That's good for our utilities. But it also makes the foregone revenue calculation come out high. Thus when BPA's rates are lowest, people complain that foregone revenues are high! And vice versa. When foregone revenues are down, it's because prices are low. But that's when rates are high. These two factors work opposite each other, but most folks don't understand that.

Steve Weiss
Constituent Account Executive for Public Interest Groups
503-230-5970 - office;

Ex 6

From: Gilly Lyons Ex 6
Sent: Monday, May 13, 2013 8:08 AM
To: Weiss,Steven D (BPA) - DKR-7
Cc: Joseph Bogaard; Sara Patton
Subject: Re: Rate case and BiOp spill levels

Thanks a ton for this, Steve. Very helpful!

Sent from my iPhone

On May 13, 2013, at 7:50 AM, "Weiss,Steven D (BPA) - DKR-7" <sdweiss@bpa.gov> wrote:

1. **N**MFS **F**CRPS **B**iOp [event/adjustment/surcharge]

2. Yes. Rates will probably not change, since the CRAC and NFB thresholds will not have been surpassed. Reserves will eat the difference, about $20-30 million per year depending upon hydro conditions and market prices. The injunctive spill will be bigger or smaller depending on water, and the power would be worth more or less depending on the market prices. Market prices will tend to be a lower in higher water years, since supply is up, and vice versa; but, more important are Calif. conditions (weather, and whether the San Onofre nuke plant comes back, etc.) that controls market prices.

Steve Weiss
Constituent Account Executive for Public Interest Groups
503-230-5970 - office;

Ex 6

From: Joseph Bogaard Ex 6
Sent: Friday, May 10, 2013 2:36 PM
To: Weiss,Steven D (BPA) - DKR-7; Sara Patton; gilly
Subject: Re: Rate case and BiOp spill levels

Thanks Steve for the clarification.
Two questions:
1. What is NFB?

Maybe this is stated below, but to clarify:
2. If spill in 2014 continues at same level as now (injunctive spill), and are not at the 2008 levels as I understand BPA is planning on, you are saying that reserves will go down and rates are very likely to remain the same.
Is this correct?
And by how much would you expect the reserves to drop?

On 5/10/13 2:03 PM, "Weiss,Steven D (BPA) - DKR-7" <sdweiss@bpa.gov> wrote:

Remember everyone that we are in ex parte mode regarding the ratecase. So you can't argue with me about policy, but you can ask clarifying questions.

A question that did come up in our discussions was in regard to whether the difference between what we modeled (2008 levels of spill) and the court-ordered level could trigger the fish CRAC if the court-ordered level was implemented during the rate period.

The "fish CRAC is actually two mechanisms called the NFB *Adjustment* and the Emergency NFB *Surcharge*.

An NFB "Event" applies to both mechanisms and is an event that reduces BPA's net revenue compared to the FCRPS mainstem operations assumed in the rate case. NFB Events all relate to the FCRPS BiOp litigation. They comprise court orders, agreements, or implementations of Recovery Plans under the ESA, that resolve any issues in, or cause parties to withdraw from, the litigation, a new FCRPS BiOp, or actions required under the AMIP.

If BPA is in a 'cash crunch', meaning within-year Agency Treasury Payment Probability (TPP) is very low (it is not this year), as in less than 80%, I believe, the Emergency NFB *Surcharge* would trigger, and BPA would almost immediately apply a surcharge to non-Slice Power rates.

If BPA is not in a cash crunch, the NFB *Adjustment* would raise the cap on the CRAC applicable to rates for the next fiscal year. This would only affect customers' rates if the CRAC triggers AND it triggers for more than the cap of $300 million. It appears very unlikely that the CRAC for FY 14 will trigger – an event outside the set of variables we model would have to occur.

So—there is virtually no chance that a change in FY 13 spill (from the assumptions in the rate case would cause rates in FY 13 or FY 14 to increase. It would instead end up lowering reserves.

In this ratecase, we have proposed to roll over the NFB mechanisms for the 14-15 period.

Steve Weiss
Constituent Account Executive for Public Interest Groups
503-230-5970 - office;

Ex 6

Q:\RATE5\12_RateCase15_final\OPERspillactual

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5972	4920	6743	7363	8020	5741	6361	5654	5342	6388
1930	5324	6931	6940	5909	6512	6034	5629	7569	7927	5427	7775	6737	5654	5149	6395
1931	5384	7209	7179	5493	5210	5559	5818	5312	8451	6853	7168	6823	5528	4992	6278
1932	5014	6392	6938	4717	4707	7650	11452	11328	12537	12346	7722	7806	6497	5732	7692
1933	5420	6187	7670	9878	10074	9184	8712	8187	10462	13112	10575	8663	8552	5689	8770
1934	6178	9912	13203	14085	13427	11257	12094	11515	11208	9726	8148	6302	5745	5068	9984
1935	5516	5871	8108	9388	9485	9281	7569	7566	9857	8769	9318	8598	6402	5017	7971
1936	5240	6782	6991	6040	5801	6350	6715	10734	11803	11063	7458	6883	5502	4969	7284
1937	5210	7167	7105	6114	5428	5808	5264	5227	8347	6720	6915	6681	5529	4920	6265
1938	5418	6270	8548	8641	8425	9656	9472	11456	11205	11060	8638	6746	5666	5586	8341
1939	5482	6668	6812	7363	7376	7259	7814	9028	10741	6991	7200	6312	5488	5164	7115
1940	5680	7272	8589	7428	6282	10343	8455	8093	9767	7567	7098	6355	5298	4966	7434
1941	5563	6710	8274	6412	6482	6365	5724	6620	8742	7256	7830	6590	5432	5103	6749
1942	5439	7501	8674	8727	7818	7870	6594	8620	9392	10020	9784	7801	6409	6244	8017
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8428	7544	6439	5182	8738
1944	5007	6796	6854	6884	6599	5889	4905	6803	6958	5270	6566	6220	5264	4644	6089
1945	5431	6868	6982	5454	5910	5818	4907	3743	10283	10983	6252	6923	5814	5072	6648
1946	5140	6483	8422	8727	8773	8811	10296	11961	11591	11256	9276	8378	7080	5702	8583
1947	4993	6858	11241	11573	11266	10903	9008	8691	11635	11930	9613	7982	6112	5571	9282
1948	7754	8621	9630	11795	10123	8653	9111	11114	12577	12746	10385	9022	8801	6635	9830
1949	5407	6747	7923	8933	7794	10778	9959	10887	11866	11426	6312	6055	5111	4774	8164
1950	5236	6647	8074	11301	11163	11048	11084	10150	11436	11857	9509	9198	8258	5758	9270
1951	6061	8997	11389	13410	13333	12165	10971	11174	11427	10670	10258	8935	8185	5727	10242
1952	7181	7768	9621	11120	9794	9831	11268	12018	12227	11820	9041	7572	5974	4867	9305
1953	5043	6551	7048	8802	8165	8190	7844	8060	11175	12896	9979	7579	6596	5583	8205
1954	5295	7053	8874	10683	10624	9935	9150	9168	11431	11913	11141	9430	9043	8584	9488
1955	5439	7997	8525	7697	7177	6453	7111	7847	9962	12650	11235	9012	7761	5335	8199
1956	5556	8494	11270	13081	12791	11215	10960	12041	11795	12577	10327	8950	7864	5576	10208
1957	5528	6688	9001	9321	7476	9116	11306	8987	12996	13665	9114	7623	5916	5401	8775
1958	5283	6946	7458	9431	8819	9097	9320	9895	11914	12234	8203	6737	6145	5387	8396
1959	5401	7425	10676	12647	11972	10390	10230	9059	10789	12488	9035	8999	8740	8643	9817
1960	8817	9974	10648	10862	8650	8939	12445	10869	10372	11187	9114	7763	5904	5273	9360
1961	5407	6737	8214	9996	9985	9838	9843	8130	11417	12775	8901	7630	6419	5243	8701
1962	5183	6854	7493	9275	9040	6827	11748	11656	11325	11969	6587	7199	5939	5122	8145
1963	5714	7888	10227	10726	9100	8583	7302	7869	10002	10208	9185	7601	6295	5792	8497
1964	5131	6428	8088	8105	7485	6822	10009	7826	11055	12829	10971	8988	8435	6467	8419
1965	6174	7598	11453	14282	13488	11776	8456	12144	11862	11986	9631	8952	8025	5323	10184
1966	5606	7321	8590	9056	8277	6858	11401	8885	9339	9500	9244	8324	6147	5456	8047
1967	5225	6573	8419	11670	11375	10649	7960	5996	10637	12210	10076	8571	7251	5695	8942
1968	5403	7312	8582	10750	9605	9738	7280	7187	8456	11840	9567	8733	7477	7177	8643
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11504	9633	8123	7035	5524	9751
1970	5278	7066	7371	9461	8957	8430	8523	6702	10429	12515	8192	6401	5531	5302	8039
1971	5161	6680	7683	12850	13453	12023	10823	11038	12099	12486	10917	9258	8686	6172	9933
1972	5575	6873	8805	12437	12961	12746	11963	9951	12189	12528	10894	9283	8802	6847	10148
1973	5555	7016	8335	9373	7810	6398	4137	6728	8565	7132	7009	6560	5266	5028	6964
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11272	9178	8801	6548	10309
1975	4991	6857	7720	8816	9746	9144	7687	8089	10875	12735	11700	9116	7787	6199	8754
1976	6412	8976	12577	12339	12264	11369	11646	11489	12132	11659	10609	9653	9374	9149	10709
1977	5650	6981	7010	6878	6916	6267	4452	6582	6927	4523	6649	6413	5289	4227	6117
1978	4832	5872	9304	9104	9174	8803	11156	9172	11264	9588	9611	7083	5913	6586	8396
1979	5785	7008	7541	8595	6335	8528	7288	8288	11520	7763	6293	6022	5243	5240	7347
1980	5320	6905	6475	7790	7233	6250	8599	10155	12779	12017	7233	6781	5445	5595	7750
1981	5462	6871	10615	11303	10292	9018	5701	8030	10372	13349	9915	8863	8581	6162	9077
1982	5278	7255	9130	10738	13112	12833	10560	9969	11853	12588	10364	9137	8860	7400	9965
1983	6257	7358	9478	11328	10873	12020	10208	8872	11388	11608	10511	9094	8825	6022	9612
1984	5398	9267	9426	10559	10539	9989	11867	11496	11752	12986	10375	9089	7293	6017	9671
1985	5379	7213	8412	8591	8105	7893	9347	9949	11785	8954	5439	5495	4860	5011	7628
1986	5906	8400	8458	9396	10334	13093	10824	10737	10382	11734	8234	7224	5747	5333	9032
1987	5067	6621	8571	8184	6217	8328	6483	7352	9756	8969	6802	6010	5067	4845	7161
1988	5268	6897	6444	5975	5454	6123	5569	7348	8296	7062	8122	6739	5690	4820	6433
1989	5146	6307	8210	6579	6367	7529	9462	11228	10812	9016	6321	6283	5448	5080	7300
1990	5229	7251	9006	9959	9839	9366	8331	11583	10392	11474	8497	8256	7001	5278	8647
1991	4853	9108	10030	11163	10769	9906	9789	8595	10923	11351	10393	8850	8377	5443	9305
1992	5039	6799	7232	7742	6326	8205	5713	6540	8058	6571	6678	6078	5215	4613	6593
1993	5414	6809	7458	6030	5299	6987	6395	8130	10744	9812	7595	6935	5865	5103	7087
1994	5156	7360	7375	6097	6439	5946	5138	7166	9586	8674	7529	6490	5409	5139	6785
1995	5191	6284	7526	6832	10055	10237	7778	7457	9570	11692	8618	6972	5846	5684	7959
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	10794	9014	8544	5444	11012
1997	5191	7086	9402	14166	14378	13415	11189	12273	12090	12934	10972	9182	8866	7148	10607
1998	8063	8511	9183	8622	9172	7952	7264	8467	12189	12784	9273	8772	6869	5401	8901
1999	5152	6237	8880	12300	12279	12154	9803	10043	11397	12895	10701	9268	8874	6595	9787
2000	5450	9391	10217	9904	9501	9025	11018	11792	10132	9617	9037	8012	5296	5250	8790
2001	5227	6858	6957	6891	6601	6277	4778	6776	7703	4087	6724	6163	5183	4059	6073
2002	4716	6244	7770	6583	6876	6722	8600	10804	9546	12144	10143	7905	6236	5291	7732
2003	4946	7244	7101	6150	6405	9440	8801	8677	9855	11719	6389	5751	4965	4725	7337
2004	5513	7060	8829	6781	5971	8277	7774	7926	9794	9910	6377	6075	5361	6545	7387
2005	5504	6966	8883	8939	8404	7115	5851	7499	10456	9825	7215	6854	5534	5234	7614
2006	5331	6895	8209	10292	9815	9518	11911	11650	12364	11777	8166	7472	5219	4952	8775
2007	4768	7200	8322	10004	8010	10995	9857	9082	10581	9183	8962	6660	5348	4600	8181
2008	5529	6826	7707	7619	7486	7020	7691	6276	12166	13324	9399	7351	6930	5291	8043

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7300	8020	8308	5907	6490	5953	5342	6540
1930	5324	6931	6940	5909	6512	6016	5893	7816	8326	5667	7898	6821	5940	5149	6495
1931	5384	7209	7179	5493	5210	5541	6388	5837	9085	7086	7218	6823	5644	4992	6404
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9002	8466	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7837	7782	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7042	10905	11803	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5769	8984	7025	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11242	8837	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8162	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8835	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7561	7979	6711	5787	5103	6897
1942	5439	7501	8674	8727	7818	7851	6940	8870	9772	10230	10021	7945	6775	6244	8131
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7354	7603	5565	6714	6343	5578	4644	6242
1945	5431	6868	6982	5454	5910	5800	5103	3876	10497	11131	6405	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9335	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11339	12577	12746	10642	9210	9278	6635	9902
1949	5407	6747	7923	8933	7794	10778	10399	11078	11866	11532	6587	6183	5470	4774	8243
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8118	8328	11228	12896	10268	7759	7065	5583	8282
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7395	8069	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10641	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10181	8354	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7592	8097	10318	10422	9402	7757	6680	5792	8603
1964	5131	6428	8088	8105	7485	6803	10478	8089	11340	12829	11249	9181	8920	6467	8524
1965	6174	7598	11453	14282	13488	11776	8882	12185	11862	12006	9852	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9746	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8222	6170	10657	12210	10338	8732	7692	5695	9009
1968	5403	7312	8582	10750	9605	9730	7531	7328	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8793	6875	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4305	6859	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8006	8353	10875	12735	11928	9332	8346	6199	8830
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11773	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7097	7508	4741	6678	6418	5408	4227	6229
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9807	9895	7262	6398	6586	8493
1979	5785	7008	7541	8595	6335	8519	7549	8542	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12211	7473	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10169	11785	9204	5553	5617	5143	5011	7705
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7995	10400	9153	6893	6070	5301	4845	7298
1988	5268	6897	6444	5975	5454	6104	6098	8060	8962	7373	8217	6765	5872	4820	6581
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9261	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11616	10592	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7120	8688	6711	6764	6108	5384	4613	6716
1993	5414	6809	7458	6030	5299	6968	6773	8376	10822	10031	7809	7122	6354	5103	7183
1994	5156	7360	7375	6097	6439	5928	5667	7868	10226	8947	7641	6546	5619	5139	6931
1995	5191	6284	7526	6832	10055	10237	8153	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	11037	9197	9004	5444	11060
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7567	8731	12189	12784	9358	8945	7265	5401	8954
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7317	8355	4326	6829	6233	5405	4059	6211
2002	4716	6244	7770	6583	6876	6704	9028	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9183	8950	10213	11891	6617	5833	5241	4725	7442
2004	5513	7060	8829	6781	5971	8259	8091	8168	10182	10151	6527	6180	5744	6545	7495
2005	5504	6966	8883	8939	8404	7096	6352	8112	11023	10119	7349	6937	5804	5234	7757
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10106	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7977	6498	12166	13324	9656	7510	7391	5291	8110

actual spill

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	18	-459	-557	-657	-288	-166	-129	-299	0	-152
1930	0	0	0	0	0	18	-264	-247	-399	-240	-123	-84	-286	0	-100
1931	0	0	0	0	0	18	-570	-525	-634	-233	-50	0	-116	0	-126
1932	0	0	0	0	0	18	-413	-95	0	0	-194	-120	-347	0	-56
1933	0	0	0	0	0	18	-290	-279	-363	0	-233	-132	-388	0	-94
1934	0	0	0	0	0	0	-363	-126	-305	-153	-69	-14	-151	0	-72
1935	0	0	0	0	0	18	-268	-216	-347	-236	-164	-89	-283	0	-97
1936	0	0	0	0	0	19	-327	-171	0	-63	-161	-79	-268	0	-53
1937	0	0	0	0	0	19	-443	-542	-637	-305	-109	-53	-204	0	-138
1938	0	0	0	0	0	0	-390	-84	0	-182	-199	-143	-356	0	-73
1939	0	0	0	0	0	18	-348	-264	-136	-214	-114	-62	-225	0	-75
1940	0	0	0	0	0	0	-380	-274	-361	-251	-102	-54	-213	0	-98
1941	0	0	0	0	0	18	-486	-440	-625	-305	-149	-121	-355	0	-148
1942	0	0	0	0	0	19	-346	-250	-380	-210	-237	-144	-366	0	-114
1943	0	0	0	0	0	0	0	0	0	0	-254	-208	-494	0	-52
1944	0	0	0	0	0	19	-532	-551	-645	-295	-148	123	-314	0	-153
1945	0	0	0	0	0	18	-196	-133	-214	-148	-153	-139	-346	0	-77
1946	0	0	0	0	0	18	-283	0	0	-140	-203	-335	-432	0	-71
1947	0	0	0	0	0	9	-327	-242	0	-35	-205	-153	-413	0	-67
1948	0	0	0	0	0	18	-343	-225	0	0	-257	-188	-477	0	-72
1949	0	0	0	0	0	0	-440	-191	0	-106	-275	-128	-359	0	-79
1950	0	0	0	0	0	0	-406	-121	0	0	-275	-211	-503	0	-76
1951	0	0	0	0	0	0	-354	1	0	-171	-239	-173	-462	0	-76
1952	0	0	0	0	0	0	-89	0	0	-44	-183	-216	-447	0	-52
1953	0	0	0	0	0	18	-274	-268	-53	0	-289	-180	-469	0	-77
1954	0	0	0	0	0	9	-384	-227	0	0	-177	-180	-498	0	-68
1955	0	0	0	0	0	18	-284	-222	-365	0	-260	-170	-452	0	-99
1956	0	0	0	0	0	0	-203	0	0	0	-220	-180	-480	0	-55
1957	0	0	0	0	0	0	-491	-237	0	-21	-199	-158	-419	0	-73
1958	0	0	0	0	0	1	-335	-226	0	0	-173	-156	-382	0	-61
1959	0	0	0	0	0	0	-411	-218	-178	-15	-212	-165	-463	0	-87
1960	0	0	0	0	0	18	-350	-101	-370	-190	-158	-147	-411	0	-101
1961	0	0	0	0	0	9	-338	-224	-196	0	-128	-68	-267	0	-65
1962	0	0	0	0	0	18	-164	0	-91	-12	-183	-162	-422	0	-55
1963	0	0	0	0	0	18	-290	-228	-316	-214	-217	-156	-385	0	-106
1964	0	0	0	0	0	19	-469	-263	-285	0	-278	-193	-485	0	-105
1965	0	0	0	0	0	0	-426	-41	0	-20	-221	-220	-557	0	-73
1966	0	0	0	0	0	18	-363	-185	-364	-246	-141	-89	-287	0	-100
1967	0	0	0	0	0	0	-262	-174	-20	0	-262	-161	-441	0	-67
1968	0	0	0	0	0	8	-251	-141	-388	-50	-156	-146	-478	0	-93
1969	0	0	0	0	0	0	0	0	0	-10	-147	-146	-376	0	-36
1970	0	0	0	0	0	0	-270	-173	-236	0	-89	-167	-443	0	-72
1971	0	0	0	0	0	0	-336	-1	0	0	-219	-198	-489	0	-62
1972	0	0	0	0	0	0	-233	-1	0	0	-244	-185	-489	0	-59
1973	0	0	0	0	0	19	-168	-131	-393	-242	-122	-90	-275	0	-90
1974	0	0	0	0	0	0	0	0	0	0	-186	-206	-514	0	-47
1975	0	0	0	0	0	4	-319	-264	0	0	-228	-216	-559	0	-76
1976	0	0	0	0	0	0	-385	-93	0	-114	-251	-209	-535	0	-82
1977	0	0	0	0	0	19	-413	-515	-581	-218	-29	-5	-119	0	-112
1978	0	0	0	0	0	18	-459	-174	-20	-219	-284	-179	-485	0	-97
1979	0	0	0	0	0	9	-261	-254	-110	-236	-126	-100	-345	0	-79
1980	0	0	0	0	0	19	-247	-241	0	-194	-240	-133	-367	0	-77
1981	0	0	0	0	0	0	-500	-674	-622	0	-190	-135	-408	0	-141
1982	0	0	0	0	0	0	-473	-187	0	0	-261	-212	-502	0	-80
1983	0	0	0	0	0	0	-378	-212	0	0	-195	-194	-506	0	-71
1984	0	0	0	0	0	0	-425	-84	0	0	-291	-217	-512	0	-77
1985	0	0	0	0	0	18	-520	-220	0	-250	-114	-122	-283	0	-77
1986	0	0	0	0	0	0	-472	-158	-293	-101	-284	-140	-353	0	-104
1987	0	0	0	0	0	18	-517	-643	-644	-184	-91	-60	-234	0	-137
1988	0	0	0	0	0	19	-529	-712	-666	-311	-95	-26	-182	0	-148
1989	0	0	0	0	0	19	-443	-207	-391	-245	-134	-100	-316	0	-108
1990	0	0	0	0	0	18	-618	-656	-631	-217	-152	-110	-410	0	-157
1991	0	0	0	0	0	19	-569	-609	-591	-265	-199	-131	-393	0	-159
1992	0	0	0	0	0	18	-501	-580	-630	-140	-86	-30	-169	0	-123
1993	0	0	0	0	0	19	-378	-246	-78	-219	-214	-187	-489	0	-96
1994	0	0	0	0	0	18	-529	-702	-640	-273	-112	-56	-210	0	-146
1995	0	0	0	0	0	0	-375	-253	-330	-10	-331	-189	-458	0	-111
1996	0	0	0	0	0	0	0	0	0	0	-243	-183	-460	0	-48
1997	0	0	0	0	0	0	-254	0	0	0	-259	-232	-539	0	-65
1998	0	0	0	0	0	18	-303	-264	0	0	-85	-173	-396	0	-53
1999	0	0	0	0	0	9	-322	-155	0	0	-279	-205	-517	0	-74
2000	0	0	0	0	0	18	-313	0	-268	-229	-158	-109	-311	0	-84
2001	0	0	0	0	0	18	-490	-541	-652	-239	-105	-70	-222	0	-138
2002	0	0	0	0	0	18	-428	-263	-387	-33	-193	-134	-412	0	-102
2003	0	0	0	0	0	18	-382	-273	-358	-172	-228	-82	-276	0	-105
2004	0	0	0	0	0	18	-317	-242	-388	-241	-150	-105	-383	0	-108
2005	0	0	0	0	0	19	-501	-613	-567	-294	-134	-83	-270	0	-143
2006	0	0	0	0	0	9	0	-2	0	-1	-154	-84	-275	0	-28
2007	0	0	0	0	0	9	-249	-216	-325	-230	-123	-57	-239	0	-88
2008	0	0	0	0	0	19	-286	-222	0	0	-257	-159	-461	0	-67
average	**0**	**0**	**0**	**0**	**0**	**11**	**-347**	**-238**	**-227**	**-116**	**-185**	**-138**	**-377**	**0**	**-90**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58D08	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
average								**actual spill**					0	

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	0.5	-5.2	-6.3	-13.8	-6.3	-4.4	-1.6	-4.0	0.0	-41.1	-29.4	-12.1
1930	0.0	0.0	0.0	0.0	0.0	0.5	-2.8	-2.6	-8.3	-5.9	-3.0	-1.1	-4.0	0.0	-27.2	-17.7	-10.0
1931	0.0	0.0	0.0	0.0	0.0	0.5	-6.4	-5.9	-12.8	-5.7	-1.3	0.0	1.6	0.0	-33.2	-28.9	-4.8
1932	0.0	0.0	0.0	0.0	0.0	0.4	-3.3	-0.8	0.0	0.0	-4.3	-1.4	-4.3	0.0	-13.7	-4.0	-10.0
1933	0.0	0.0	0.0	0.0	0.0	0.4	-3.0	-2.8	-6.4	0.0	-4.3	-1.4	-4.4	0.0	-21.9	-12.2	-10.1
1934	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	-1.0	-5.0	-3.1	-1.7	-0.2	-2.0	0.0	-15.8	-11.0	-4.8
1935	0.0	0.0	0.0	0.0	0.0	0.4	-2.6	-2.1	-5.8	-4.5	-3.5	-1.0	-3.5	0.0	-22.7	-13.6	-9.6
1936	0.0	0.0	0.0	0.0	0.0	0.5	-3.2	-1.7	0.0	-1.0	-3.8	-1.0	-3.6	0.0	-13.7	-5.5	-8.6
1937	0.0	0.0	0.0	0.0	0.0	0.5	-4.8	-5.9	-11.9	-6.4	-2.6	-0.6	-2.6	0.0	-34.4	-26.9	-7.9
1938	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	-0.6	0.0	-2.9	-4.3	-1.7	-4.5	0.0	-16.8	-5.4	-11.4
1939	0.0	0.0	0.0	0.0	0.0	0.5	-3.2	-2.4	-2.1	-4.6	-2.7	-0.8	-3.0	0.0	-18.4	-10.8	-8.0
1940	0.0	0.0	0.0	0.0	0.0	0.0	-3.6	-2.6	-6.3	-5.3	-2.5	-0.7	-2.8	0.0	-23.7	-16.0	-7.7
1941	0.0	0.0	0.0	0.0	0.0	0.5	-5.2	-4.7	-11.9	-6.6	-3.5	-1.5	-4.7	0.0	-37.7	-26.2	-11.9
1942	0.0	0.0	0.0	0.0	0.0	0.4	-3.3	-2.4	-6.7	-3.8	-4.8	-1.7	-4.5	0.0	-26.8	-15.0	-12.3
1943	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.3	-2.4	-6.0	0.0	-13.7	0.0	-13.7
1944	0.0	0.0	0.0	0.0	0.0	0.5	-6.0	-6.2	-14.3	-7.3	-3.8	-1.6	-4.5	0.0	-43.2	-31.3	-12.4
1945	0.0	0.0	0.0	0.0	0.0	0.5	-2.2	-1.5	-3.4	-2.4	-3.7	-1.7	-4.4	0.0	-18.8	-8.6	-10.6
1946	0.0	0.0	0.0	0.0	0.0	0.4	-1.9	0.0	0.0	-2.0	-4.0	-3.5	-4.8	0.0	-15.8	-3.2	-13.0
1947	0.0	0.0	0.0	0.0	0.0	0.2	-2.8	-2.1	0.0	-0.5	-4.3	-1.8	-5.2	0.0	-16.6	-5.3	-11.5
1948	0.0	0.0	0.0	0.0	0.0	0.4	-2.9	-1.9	0.0	0.0	-4.9	-2.0	-5.3	0.0	-16.6	-4.8	-12.2
1949	0.0	0.0	0.0	0.0	0.0	0.0	-3.5	-1.5	0.0	-1.6	-6.7	-1.6	-4.7	0.0	-19.6	-6.0	-13.5
1950	0.0	0.0	0.0	0.0	0.0	0.0	-3.1	-0.9	0.0	0.0	-5.4	-2.2	-5.5	0.0	-17.2	-4.1	-13.1
1951	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	0.0	0.0	-2.8	-4.8	-1.9	-5.4	0.0	-17.5	-4.5	-13.0
1952	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	0.0	-0.6	-3.9	-2.5	-5.6	0.0	-13.2	-1.0	-12.2
1953	0.0	0.0	0.0	0.0	0.0	0.4	-2.7	-2.6	-0.8	0.0	-5.7	-2.1	-5.9	0.0	-19.4	-6.1	-13.7
1954	0.0	0.0	0.0	0.0	0.0	0.2	-3.5	-2.1	0.0	0.0	-3.1	-1.8	-5.4	0.0	-15.6	-5.5	-10.3
1955	0.0	0.0	0.0	0.0	0.0	0.4	-2.8	-2.2	-6.3	0.0	-4.4	-1.8	-5.1	0.0	-22.3	-11.4	-11.3
1956	0.0	0.0	0.0	0.0	0.0	0.0	-1.4	0.0	0.0	0.0	-4.2	-1.9	-5.3	0.0	-12.7	-1.4	-11.3
1957	0.0	0.0	0.0	0.0	0.0	0.0	-4.0	-1.9	0.0	-0.3	-4.2	-1.8	-5.1	0.0	-17.4	-6.1	-11.3
1958	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	-1.9	0.0	0.0	-3.8	-1.8	-4.8	0.0	-15.1	-4.8	-10.4
1959	0.0	0.0	0.0	0.0	0.0	0.0	-3.4	-1.8	-2.6	-0.2	-4.0	-1.6	-4.9	0.0	-18.6	-7.9	-10.6
1960	0.0	0.0	0.0	0.0	0.0	0.4	-2.6	-0.7	-5.9	-3.2	-3.5	-1.8	-5.4	0.0	-22.7	-11.4	-11.7
1961	0.0	0.0	0.0	0.0	0.0	0.2	-3.2	-2.1	-3.1	0.0	-2.8	-0.8	-3.4	0.0	-15.2	-8.4	-7.0
1962	0.0	0.0	0.0	0.0	0.0	0.5	-1.1	0.0	-1.3	-0.2	-4.7	-2.0	-5.7	0.0	-14.5	-2.6	-12.5
1963	0.0	0.0	0.0	0.0	0.0	0.4	-2.9	-2.3	-5.1	-3.8	-4.7	-1.8	-4.8	0.0	-25.0	-12.8	-12.6
1964	0.0	0.0	0.0	0.0	0.0	0.5	-4.4	-2.5	-4.8	0.0	-5.2	-2.1	-5.6	0.0	-24.1	-11.7	-12.9
1965	0.0	0.0	0.0	0.0	0.0	0.0	-3.6	-0.3	0.0	-0.3	-4.8	-2.4	-6.4	0.0	-17.8	-4.2	-13.7
1966	0.0	0.0	0.0	0.0	0.0	0.5	-3.1	-1.6	-6.6	-4.8	-3.2	-1.1	-3.7	0.0	-23.5	-14.4	-9.5
1967	0.0	0.0	0.0	0.0	0.0	0.0	-2.8	-1.8	-0.3	0.0	-5.1	-1.9	-5.4	0.0	-17.3	-4.9	-12.4
1968	0.0	0.0	0.0	0.0	0.0	0.2	-2.6	-1.4	-7.1	-0.7	-3.2	-1.6	-5.7	0.0	-22.2	-11.6	-10.7
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-2.8	-1.5	-4.1	0.0	-8.5	-0.1	-8.5
1970	0.0	0.0	0.0	0.0	0.0	0.0	-2.5	-1.6	-3.3	0.0	-2.0	-1.9	-5.5	0.0	-16.9	-7.5	-9.4
1971	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	0.0	0.0	0.0	-3.6	-1.9	-5.1	0.0	-12.8	-2.2	-10.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	0.0	0.0	0.0	-4.3	-1.8	-5.0	0.0	-12.6	-1.5	-11.0
1973	0.0	0.0	0.0	0.0	0.0	0.4	-1.8	-1.4	-7.0	-4.9	-2.8	-1.1	-3.5	0.0	-22.1	-13.5	-9.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	-1.8	-4.9	0.0	-9.5	0.0	-9.5
1975	0.0	0.0	0.0	0.0	0.0	0.1	-3.0	-2.5	0.0	0.0	-4.1	-2.5	-6.8	0.0	-18.8	-5.5	-13.4
1976	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	-0.7	0.0	-1.8	-4.9	-2.2	-5.9	0.0	-18.5	-5.0	-13.5
1977	0.0	0.0	0.0	0.0	0.0	0.5	-4.6	-5.8	-13.0	-5.7	-0.7	-0.1	-1.6	0.0	-31.0	-27.2	-4.3
1978	0.0	0.0	0.0	0.0	0.0	0.4	-3.6	-1.4	-0.3	-4.0	-5.9	-2.1	-6.0	0.0	-22.7	-7.9	-15.2
1979	0.0	0.0	0.0	0.0	0.0	0.2	-2.7	-2.6	-1.6	-4.8	-3.0	-1.2	-4.5	0.0	-20.3	-10.2	-10.3
1980	0.0	0.0	0.0	0.0	0.0	0.5	-2.2	-2.1	0.0	-3.2	-5.6	-1.7	-4.9	0.0	-19.2	-6.5	-13.2
1981	0.0	0.0	0.0	0.0	0.0	0.0	-5.1	-6.9	-10.7	0.0	-3.9	-1.5	-4.9	0.0	-33.1	-22.8	-10.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-1.4	0.0	0.0	-5.1	-2.2	-5.4	0.0	-17.8	-5.1	-12.7
1983	0.0	0.0	0.0	0.0	0.0	0.0	-3.3	-1.8	0.0	0.0	-3.6	-2.0	-5.6	0.0	-16.2	-5.1	-11.2
1984	0.0	0.0	0.0	0.0	0.0	0.0	-3.3	-0.6	0.0	0.0	-5.8	-2.3	-5.9	0.0	-18.0	-3.9	-14.0
1985	0.0	0.0	0.0	0.0	0.0	0.4	-4.6	-1.9	0.0	-5.0	-3.0	-1.6	-4.0	0.0	-19.7	-9.8	-10.4
1986	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-1.2	-5.0	-1.8	-6.7	-1.7	-4.7	0.0	-24.8	-11.0	-13.7
1987	0.0	0.0	0.0	0.0	0.0	0.4	-5.3	-6.6	-11.9	-3.9	-2.3	-0.8	-3.3	0.0	-33.6	-26.4	-7.7
1988	0.0	0.0	0.0	0.0	0.0	0.5	-5.4	-7.3	-13.0	-6.7	-2.1	-0.3	-2.4	0.0	-36.7	-30.2	-7.1
1989	0.0	0.0	0.0	0.0	0.0	0.5	-3.7	-1.7	-6.7	-4.9	-3.4	-1.3	-4.4	0.0	-25.6	-15.4	-10.7
1990	0.0	0.0	0.0	0.0	0.0	0.4	-5.6	-5.9	-11.0	-3.8	-3.3	-1.2	-5.0	0.0	-35.4	-25.0	-10.8
1991	0.0	0.0	0.0	0.0	0.0	0.4	-5.2	-5.6	-10.0	-4.8	-3.9	-1.4	-4.5	0.0	-35.1	-24.1	-11.5
1992	0.0	0.0	0.0	0.0	0.0	0.4	-5.3	-6.2	-12.5	-3.3	-2.2	-0.4	-2.3	0.0	-31.7	-26.2	-6.0
1993	0.0	0.0	0.0	0.0	0.0	0.5	-3.8	-2.5	-1.3	-4.1	-5.2	-2.4	-6.8	0.0	-25.7	-10.4	-15.8
1994	0.0	0.0	0.0	0.0	0.0	0.5	-5.8	-7.7	-12.3	-5.9	-2.7	-0.7	-2.8	0.0	-37.2	-29.6	-8.1
1995	0.0	0.0	0.0	0.0	0.0	0.0	-3.8	-2.5	-5.8	-0.2	-7.1	-2.2	-5.6	0.0	-27.1	-12.2	-14.9
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.4	-1.9	-5.1	0.0	-11.4	0.0	-11.4
1997	0.0	0.0	0.0	0.0	0.0	0.0	-1.8	0.0	0.0	0.0	-4.8	-2.5	-6.2	0.0	-15.3	-1.8	-13.5
1998	0.0	0.0	0.0	0.0	0.0	0.4	-2.8	-2.4	0.0	0.0	-1.7	-1.8	-4.5	0.0	-12.9	-5.2	-8.0
1999	0.0	0.0	0.0	0.0	0.0	0.2	-2.6	-1.3	0.0	0.0	-4.9	-1.9	-5.2	0.0	-15.8	-3.9	-12.0
2000	0.0	0.0	0.0	0.0	0.0	0.4	-2.2	0.0	-4.1	-4.0	-3.4	-1.3	-3.9	0.0	-18.4	-9.0	-9.9
2001	0.0	0.0	0.0	0.0	0.0	0.5	-5.6	-6.2	-14.2	-6.7	-2.8	-0.9	-3.2	0.0	-39.1	-30.5	-9.2
2002	0.0	0.0	0.0	0.0	0.0	0.5	-3.8	-2.3	-7.4	-0.6	-3.9	-1.6	-5.3	0.0	-24.4	-13.9	-10.9
2003	0.0	0.0	0.0	0.0	0.0	0.4	-3.9	-2.8	-6.7	-3.0	-5.8	-1.1	-3.8	0.0	-26.5	-15.3	-11.6
2004	0.0	0.0	0.0	0.0	0.0	0.4	-3.2	-2.4	-7.3	-4.8	-3.7	-1.4	-5.3	0.0	-27.8	-16.1	-12.0
2005	0.0	0.0	0.0	0.0	0.0	0.5	-5.6	-6.8	-10.1	-5.7	-3.3	-1.0	-3.4	0.0	-35.5	-26.3	-9.7
2006	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	-3.2	-1.0	-3.4	0.0	-7.4	0.0	-7.6
2007	0.0	0.0	0.0	0.0	0.0	0.2	-2.3	-2.0	-5.6	-4.7	-2.7	-0.7	-3.1	0.0	-20.9	-12.9	-8.1
2008	0.0	0.0	0.0	0.0	0.0	0.5	-3.0	-2.3	0.0	0.0	-5.3	-1.8	-5.6	0.0	-17.5	-5.2	-12.7
average	**0**	**0**	**0**	**0**	**0**	**0**	**-3**	**-2**	**-4**	**-2**	**-4**	**-2**	**-5**	**0**	**-22**	**-11**	**-11**

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

updated the court order spill file to better reflect new gas caps

should not make much if any difference

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5972	4911	6728	7346	8015	5741	6381	5654	5342	6386
1930	5324	6931	6940	5909	6512	6034	5616	7554	7909	5422	7772	6761	5654	5149	6393
1931	5384	7209	7179	5493	5210	5559	5806	5298	8433	6843	7165	6847	5528	4992	6276
1932	5014	6392	6938	4717	4707	7650	11439	11322	12537	12346	7720	7830	6526	5732	7693
1933	5420	6187	7670	9878	10074	9184	8700	8180	10445	13112	10575	8686	8579	5689	8769
1934	6178	9912	13203	14085	13427	11257	12082	11509	11190	9726	8145	6327	5745	5068	9983
1935	5516	5871	8108	9388	9485	9281	7556	7551	9839	8764	9316	8621	6431	5017	7969
1936	5240	6782	6991	6040	5801	6350	6702	10727	11803	11058	7456	6908	5502	4969	7284
1937	5210	7167	7105	6114	5428	5808	5264	5212	8330	6715	6912	6706	5529	4920	6263
1938	5418	6270	8548	8641	8425	9656	9459	11449	11205	11055	8635	6770	5666	5586	8341
1939	5482	6668	6812	7363	7376	7259	7801	9021	10724	6981	7197	6337	5488	5164	7112
1940	5680	7272	8589	7428	6282	10343	8442	8086	9750	7562	7096	6379	5298	4966	7432
1941	5563	6710	8274	6412	6482	6365	5711	6620	8724	7250	7828	6614	5432	5103	6747
1942	5439	7501	8674	8727	7818	7870	6581	8613	9375	10015	9782	7825	6436	6244	8016
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8441	7568	6467	5182	8742
1944	5007	6796	6854	6884	6599	5889	4893	6788	6940	5265	6563	6245	5264	4644	6087
1945	5431	6868	6982	5454	5910	5818	4894	3728	10266	10978	6249	6947	5814	5072	6646
1946	5140	6483	8422	8727	8773	8811	10283	11961	11591	11251	9273	8401	7108	5702	8584
1947	4993	6858	11241	11573	11266	10903	8995	8684	11635	11925	9611	8006	6115	5571	9282
1948	7754	8621	9630	11795	10123	8653	9098	11107	12577	12746	10382	9045	8828	6635	9831
1949	5407	6747	7923	8933	7794	10778	9946	10880	11866	11420	6309	6080	5111	4774	8163
1950	5236	6647	8074	11301	11163	11048	11079	10143	11436	11857	9523	9220	8285	5758	9273
1951	6061	8997	11389	13410	13333	12165	10958	11167	11427	10665	10256	8958	8213	5727	10243
1952	7181	7768	9621	11120	9794	9831	11256	12018	12227	11819	9034	7596	5992	4867	9306
1953	5043	6551	7048	8802	8165	8190	7832	8053	11158	12896	9995	7603	6624	5583	8206
1954	5295	7053	8874	10683	10624	9935	9138	9162	11431	11913	11141	9452	9070	8584	9489
1955	5439	7997	8525	7697	7177	6453	7098	7832	9945	12650	11235	9034	7789	5335	8199
1956	5556	8494	11270	13081	12791	11215	10955	12041	11795	12577	10325	8972	7891	5576	10209
1957	5528	6688	9001	9321	7476	9116	11293	8981	12996	13660	9112	7647	5917	5401	8774
1958	5283	6946	7458	9431	8819	9097	9308	9888	11914	12234	8200	6761	6162	5387	8397
1959	5401	7425	10676	12647	11972	10390	10217	9044	10771	12483	9032	9022	8767	8643	9816
1960	8817	9974	10648	10862	8650	8939	12439	10862	10355	11182	9112	7787	5904	5273	9359
1961	5407	6737	8214	9996	9985	9838	9831	8116	11399	12776	8898	7654	6440	5243	8700
1962	5183	6854	7493	9275	9040	6827	11735	11656	11308	11964	6584	7223	5939	5122	8144
1963	5714	7888	10227	10726	9100	8583	7289	7854	9985	10203	9183	7625	6318	5792	8496
1964	5131	6428	8088	8105	7485	6822	9996	7819	11038	12829	10985	9011	8462	6467	8420
1965	6174	7598	11453	14282	13488	11776	8443	12137	11862	11987	9651	8975	8052	5323	10187
1966	5606	7321	8590	9056	8277	6858	11388	8871	9322	9495	9242	8348	6147	5456	8044
1967	5225	6573	8419	11670	11375	10649	7947	5981	10619	12210	10074	8594	7279	5695	8941
1968	5403	7312	8582	10750	9605	9738	7267	7172	8439	11835	9565	8756	7506	7177	8642
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11503	9629	8147	7064	5524	9753
1970	5278	7066	7371	9461	8957	8430	8510	6687	10411	12515	8189	6426	5531	5302	8037
1971	5161	6680	7683	12850	13453	12023	10818	11032	12099	12486	10932	9280	8713	6172	9935
1972	5575	6873	8805	12437	12961	12746	11958	9945	12189	12528	10894	9305	8829	6847	10150
1973	5555	7016	8335	9373	7810	6398	4134	6725	8547	7127	7006	6585	5266	5028	6963
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11289	9201	8828	6548	10312
1975	4991	6857	7720	8816	9746	9144	7674	8082	10875	12735	11714	9139	7815	6199	8757
1976	6412	8976	12577	12339	12264	11369	11633	11483	12132	11654	10607	9675	9400	9149	10710
1977	5650	6981	7010	6878	6916	6267	4452	6578	6913	4513	6646	6438	5289	4227	6116
1978	4832	5872	9304	9104	9174	8803	11143	9165	11247	9583	9613	7107	5913	6586	8394
1979	5785	7008	7541	8595	6335	8528	7275	8274	11502	7758	6290	6022	5243	5240	7344
1980	5320	6905	6475	7790	7233	6250	8586	10148	12779	12012	7230	6805	5445	5595	7750
1981	5462	6871	10615	11303	10292	9018	5688	8016	10355	13349	9913	8886	8609	6162	9076
1982	5278	7255	9130	10738	13112	12833	10548	9962	11853	12588	10376	9160	8887	7400	9968
1983	6257	7358	9478	11328	10873	12020	10195	8865	11388	11608	10527	9116	8852	6022	9615
1984	5398	9267	9426	10559	10539	9989	11862	11490	11752	12986	10390	9112	7321	6017	9674
1985	5379	7213	8412	8591	8105	7893	9334	9942	11771	8949	5439	5495	4860	5011	7626
1986	5906	8400	8458	9396	10334	13093	10819	10730	10365	11729	8232	7248	5747	5333	9030
1987	5067	6621	8571	8184	6217	8328	6470	7338	9738	8969	6800	6010	5067	4845	7158
1988	5268	6897	6444	5975	5454	6123	5557	7334	8278	7052	8119	6764	5690	4820	6430
1989	5146	6307	8210	6579	6367	7529	9449	11221	10794	9011	6318	6308	5448	5080	7299
1990	5229	7251	9006	9959	9839	9366	8319	11576	10374	11469	8495	8280	7029	5278	8646
1991	4853	9108	10030	11163	10769	9906	9776	8580	10905	11346	10391	8873	8405	5443	9304
1992	5039	6799	7232	7742	6326	8205	5700	6525	8040	6571	6675	6087	5215	4613	6590
1993	5414	6809	7458	6030	5299	6987	6382	8116	10727	9807	7593	6959	5888	5103	7086
1994	5156	7360	7375	6097	6439	5946	5125	7152	9569	8665	7526	6514	5409	5139	6782
1995	5191	6284	7526	6832	10055	10237	7765	7442	9553	11691	8618	6996	5875	5684	7959
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	10794	9037	8571	5444	11014
1997	5191	7086	9402	14166	14378	13415	11183	12273	12090	12934	10990	9204	8893	7148	10610
1998	8063	8511	9183	8622	9172	7952	7251	8452	12189	12784	9270	8795	6897	5401	8902
1999	5152	6237	8880	12300	12279	12154	9791	10037	11397	12895	10701	9290	8901	6595	9789
2000	5450	9391	10217	9904	9501	9025	11005	11792	10114	9612	9034	8035	5296	5250	8788
2001	5227	6858	6957	6891	6601	6277	4765	6761	7685	4077	6721	6188	5183	4059	6071
2002	4716	6244	7770	6583	6876	6722	8588	10798	9529	12139	10141	7929	6264	5291	7731
2003	4946	7244	7101	6150	6405	9440	8788	8670	9838	11714	6387	5775	4965	4725	7336
2004	5513	7060	8829	6781	5971	8277	7761	7911	9776	9905	6374	6100	5378	6545	7386
2005	5504	6966	8883	8939	8404	7115	5839	7484	10438	9819	7212	6879	5534	5234	7612
2006	5331	6895	8209	10292	9815	9518	11911	11650	12364	11777	8164	7496	5219	4952	8776
2007	4768	7200	8322	10004	8010	10995	9844	9067	10564	9173	8960	6685	5348	4600	8178
2008	5529	6826	7707	7619	7486	7020	7678	6262	12166	13324	9397	7375	6958	5291	8044

actual spill (2)

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7300	8020	8308	5907	6490	5953	5342	6540
1930	5324	6931	6940	5909	6512	6016	5893	7816	8326	5667	7898	6821	5940	5149	6495
1931	5384	7209	7179	5493	5210	5541	6388	5837	9085	7086	7218	6823	5644	4992	6404
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9002	8466	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7837	7782	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7042	10905	11803	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5769	8984	7025	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11242	8837	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8162	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8835	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7561	7979	6711	5787	5103	6897
1942	5439	7501	8674	8727	7818	7851	6940	8870	9772	10230	10021	7945	6775	6244	8131
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7354	7603	5565	6714	6343	5578	4644	6242
1945	5431	6868	6982	5454	5910	5800	5103	3876	10497	11131	6405	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9335	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11339	12577	12746	10642	9210	9278	6635	9902
1949	5407	6747	7923	8933	7794	10778	10399	11078	11866	11532	6587	6183	5470	4774	8243
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8118	8328	11228	12896	10268	7759	7065	5583	8282
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7395	8069	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10641	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10181	8354	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7592	8097	10318	10422	9402	7757	6680	5792	8603
1964	5131	6428	8088	8105	7485	6803	10478	8089	11340	12829	11249	9181	8920	6467	8524
1965	6174	7598	11453	14282	13488	11776	8882	12185	11862	12006	9852	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9746	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8222	6170	10657	12210	10338	8732	7692	5695	9009
1968	5403	7312	8582	10750	9605	9730	7531	7328	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8793	6875	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4305	6859	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8006	8353	10875	12735	11928	9332	8346	6199	8830
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11773	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7097	7508	4741	6678	6418	5408	4227	6229
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9807	9895	7262	6398	6586	8493
1979	5785	7008	7541	8595	6335	8519	7549	8542	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12211	7473	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10169	11785	9204	5553	5617	5143	5011	7705
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7995	10400	9153	6893	6070	5301	4845	7298
1988	5268	6897	6444	5975	5454	6104	6098	8060	8962	7373	8217	6765	5872	4820	6581
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9261	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11616	10592	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7120	8688	6711	6764	6108	5384	4613	6716
1993	5414	6809	7458	6030	5299	6968	6773	8376	10822	10031	7809	7122	6354	5103	7183
1994	5156	7360	7375	6097	6439	5928	5667	7868	10226	8947	7641	6546	5619	5139	6931
1995	5191	6284	7526	6832	10055	10237	8153	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	11037	9197	9004	5444	11060
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7567	8731	12189	12784	9358	8945	7265	5401	8954
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7317	8355	4326	6829	6233	5405	4059	6211
2002	4716	6244	7770	6583	6876	6704	9028	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9183	8950	10213	11891	6617	5833	5241	4725	7442
2004	5513	7060	8829	6781	5971	8259	8091	8168	10182	10151	6527	6180	5744	6545	7495
2005	5504	6966	8883	8939	8404	7096	6352	8112	11023	10119	7349	6937	5804	5234	7757
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10106	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7977	6498	12166	13324	9656	7510	7391	5291	8110

actual spill (2)

actual spill - base case

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	18	-468	-572	-674	-293	-166	-109	-299	0	-154
1930	0	0	0	0	0	18	-277	-262	-417	-245	-126	-60	-286	0	-102
1931	0	0	0	0	0	18	-582	-539	-652	-243	-53	24	-116	0	-128
1932	0	0	0	0	0	18	-426	-101	0	0	-196	-96	-318	0	-55
1933	0	0	0	0	0	18	-302	-286	-380	0	-233	-109	-361	0	-95
1934	0	0	0	0	0	0	-375	-132	-323	-153	-72	11	-151	0	-73
1935	0	0	0	0	0	18	-281	-231	-365	-241	-166	-66	-254	0	-99
1936	0	0	0	0	0	19	-340	-178	0	-68	-163	-54	-268	0	-53
1937	0	0	0	0	0	19	-443	-557	-654	-310	-112	-28	-204	0	-140
1938	0	0	0	0	0	0	-403	-91	0	-187	-202	-119	-356	0	-73
1939	0	0	0	0	0	18	-361	-271	-153	-224	-117	-37	-225	0	-78
1940	0	0	0	0	0	0	-393	-281	-378	-256	-104	-30	-213	0	-100
1941	0	0	0	0	0	18	-499	-440	-643	-311	-151	-97	-355	0	-150
1942	0	0	0	0	0	19	-359	-257	-397	-215	-239	-120	-339	0	-115
1943	0	0	0	0	0	0	0	0	0	0	-241	-184	-466	0	-48
1944	0	0	0	0	0	19	-544	-566	-663	-300	-151	-98	-314	0	-155
1945	0	0	0	0	0	18	-209	-148	-231	-153	-156	-115	-346	0	-79
1946	0	0	0	0	0	18	-296	0	0	-145	-206	-312	-404	0	-70
1947	0	0	0	0	0	9	-340	-249	0	-40	-207	-129	-410	0	-67
1948	0	0	0	0	0	18	-356	-232	0	0	-260	-165	-450	0	-71
1949	0	0	0	0	0	0	-453	-198	0	-112	-278	-103	-359	0	-80
1950	0	0	0	0	0	0	-411	-128	0	0	-261	-189	-476	0	-73
1951	0	0	0	0	0	0	-367	-6	0	-176	-241	-150	-434	0	-75
1952	0	0	0	0	0	0	-101	0	0	-45	-190	-192	-429	0	-51
1953	0	0	0	0	0	18	-286	-275	-70	0	-273	-156	-441	0	-76
1954	0	0	0	0	0	9	-396	-233	0	0	-177	-158	-471	0	-67
1955	0	0	0	0	0	18	-297	-237	-382	0	-260	-148	-424	0	-99
1956	0	0	0	0	0	0	-208	0	0	0	-222	-158	-453	0	-54
1957	0	0	0	0	0	0	-504	-243	0	-26	-201	-134	-418	0	-74
1958	0	0	0	0	0	1	-347	-233	0	0	-176	-132	-365	0	-60
1959	0	0	0	0	0	0	-424	-233	-196	-20	-215	-142	-436	0	-88
1960	0	0	0	0	0	18	-356	-108	-387	-195	-160	-123	-411	0	-102
1961	0	0	0	0	0	9	-350	-238	-214	1	-131	-44	-246	0	-66
1962	0	0	0	0	0	18	-177	0	-108	-17	-186	-138	-422	0	-56
1963	0	0	0	0	0	18	-303	-243	-333	-219	-219	-132	-362	0	-107
1964	0	0	0	0	0	19	-482	-270	-302	0	-264	-170	-458	0	-104
1965	0	0	0	0	0	0	-439	-48	0	-19	-201	-197	-530	0	-70
1966	0	0	0	0	0	18	-376	-199	-381	-251	-143	-65	-287	0	-103
1967	0	0	0	0	0	0	-275	-189	-38	0	-264	-138	-413	0	-68
1968	0	0	0	0	0	8	-264	-156	-405	-55	-158	-123	-449	0	-94
1969	0	0	0	0	0	0	0	0	0	-11	-151	-122	-347	0	-34
1970	0	0	0	0	0	0	-283	-188	-254	0	-92	-142	-443	0	-74
1971	0	0	0	0	0	0	-341	-7	0	0	-204	-176	-462	0	-60
1972	0	0	0	0	0	0	-238	-7	0	0	-244	-163	-462	0	-57
1973	0	0	0	0	0	19	-171	-134	-411	-247	-125	-65	-275	0	-91
1974	0	0	0	0	0	0	0	0	0	0	-169	-183	-487	0	-44
1975	0	0	0	0	0	4	-332	-271	0	0	-214	-193	-531	0	-73
1976	0	0	0	0	0	0	-398	-99	0	-119	-253	-187	-509	0	-81
1977	0	0	0	0	0	19	-413	-519	-595	-228	-32	20	-119	0	-113
1978	0	0	0	0	0	18	-472	-181	-37	-224	-282	-155	-485	0	-99
1979	0	0	0	0	0	9	-274	-268	-128	-241	-129	-100	-345	0	-82
1980	0	0	0	0	0	19	-260	-248	0	-199	-243	-109	-367	0	-77
1981	0	0	0	0	0	0	-513	-688	-639	0	-192	-112	-380	0	-142
1982	0	0	0	0	0	0	-485	-194	0	0	-249	-189	-475	0	-77
1983	0	0	0	0	0	0	-391	-219	0	0	-179	-172	-479	0	-68
1984	0	0	0	0	0	0	-430	-90	0	0	-276	-194	-484	0	-74
1985	0	0	0	0	0	18	-533	-227	-14	-255	-114	-122	-283	0	-79
1986	0	0	0	0	0	0	-477	-165	-310	-106	-286	-116	-353	0	-106
1987	0	0	0	0	0	18	-530	-657	-662	-184	-93	-60	-234	0	-140
1988	0	0	0	0	0	19	-541	-726	-684	-321	-98	-1	-182	0	-151
1989	0	0	0	0	0	19	-456	-214	-409	-250	-137	-75	-316	0	-109
1990	0	0	0	0	0	18	-630	-663	-649	-222	-154	-86	-382	0	-158
1991	0	0	0	0	0	19	-582	-624	-609	-270	-201	-108	-365	0	-160
1992	0	0	0	0	0	18	-514	-595	-648	-140	-89	-21	-169	0	-126
1993	0	0	0	0	0	19	-391	-260	-95	-224	-216	-163	-466	0	-97
1994	0	0	0	0	0	18	-542	-716	-657	-282	-115	-32	-210	0	-149
1995	0	0	0	0	0	0	-388	-268	-347	-11	-331	-165	-429	0	-111
1996	0	0	0	0	0	0	0	0	0	0	-243	-160	-433	0	-46
1997	0	0	0	0	0	0	-260	0	0	0	-241	-210	-512	0	-62
1998	0	0	0	0	0	18	-316	-279	0	0	-88	-150	-368	0	-52
1999	0	0	0	0	0	9	-334	-161	0	0	-279	-183	-490	0	-72
2000	0	0	0	0	0	18	-326	0	-286	-234	-161	-86	-311	0	-86
2001	0	0	0	0	0	18	-503	-556	-670	-249	-108	-45	-222	0	-140
2002	0	0	0	0	0	18	-440	-269	-404	-38	-195	-110	-384	0	-103
2003	0	0	0	0	0	18	-395	-280	-375	-177	-230	-58	-276	0	-106
2004	0	0	0	0	0	18	-330	-257	-406	-246	-153	-80	-366	0	-109
2005	0	0	0	0	0	19	-513	-628	-585	-300	-137	-58	-270	0	-145
2006	0	0	0	0	0	9	0	-2	0	-1	-156	-60	-275	0	-27
2007	0	0	0	0	0	9	-262	-231	-342	-240	-125	-32	-239	0	-91
2008	0	0	0	0	0	19	-299	-236	0	0	-259	-135	-433	0	-66
average	**0**	**0**	**0**	**0**	**0**	**11**	**-358**	**-247**	**-237**	**-119**	**-185**	**-116**	**-363**	**0**	**-90**

actual spill (2)

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
average								actual spill (2)					0	

actual spill - rate case aka cost of court order spill

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	0.5	-5.3	-6.5	-14.2	-6.4	-4.4	-1.4	-4.0	0.0	-41.6	-30.1	-11.9
1930	0.0	0.0	0.0	0.0	0.0	0.5	-3.0	-2.8	-8.7	-6.0	-3.1	-0.8	-4.0	0.0	-27.8	-18.5	-9.8
1931	0.0	0.0	0.0	0.0	0.0	0.5	-6.5	-6.1	-13.1	-5.9	-1.4	0.3	-1.6	0.0	-33.9	-29.7	-4.7
1932	0.0	0.0	0.0	0.0	0.0	0.4	-3.4	-0.8	0.0	0.0	-4.4	-1.1	-3.9	0.0	-13.2	-4.2	-9.4
1933	0.0	0.0	0.0	0.0	0.0	0.4	-3.1	-2.9	-6.7	0.0	-4.3	-1.2	-4.1	0.0	-21.8	-12.7	-9.6
1934	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	-1.1	-5.3	-3.1	-1.7	0.1	-2.0	0.0	-16.1	-11.5	-4.6
1935	0.0	0.0	0.0	0.0	0.0	0.4	-2.8	-2.3	-6.1	-4.6	-3.6	-0.8	-3.1	0.0	-22.8	-14.2	-9.0
1936	0.0	0.0	0.0	0.0	0.0	0.5	-3.3	-1.7	0.0	-1.1	-3.8	-0.7	-3.6	0.0	-13.7	-5.8	-8.4
1937	0.0	0.0	0.0	0.0	0.0	0.5	-4.8	-6.1	-12.2	-6.5	-2.7	-0.3	-2.6	0.0	-34.7	-27.5	-7.7
1938	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	-0.7	0.0	-2.9	-4.3	-1.4	-4.5	0.0	-16.8	-5.6	-11.2
1939	0.0	0.0	0.0	0.0	0.0	0.5	-3.3	-2.5	-2.3	-4.8	-2.8	-0.5	-3.0	0.0	-18.8	-11.4	-7.9
1940	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-2.7	-6.6	-5.4	-2.5	-0.4	-2.8	0.0	-24.0	-16.6	-7.5
1941	0.0	0.0	0.0	0.0	0.0	0.5	-5.3	-4.7	-12.3	-6.7	-3.5	-1.2	-4.7	0.0	-38.0	-26.8	-11.7
1942	0.0	0.0	0.0	0.0	0.0	0.4	-3.4	-2.5	-7.0	-3.9	-4.9	-1.4	-4.2	0.0	-26.9	-15.5	-11.8
1943	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.0	-2.1	-5.7	0.0	-12.8	0.0	-12.8
1944	0.0	0.0	0.0	0.0	0.0	0.5	-6.1	-6.4	-14.7	-7.5	-3.9	-1.3	-4.5	0.0	-43.8	-32.1	-12.2
1945	0.0	0.0	0.0	0.0	0.0	0.5	-2.3	-1.7	-3.6	-2.5	-3.8	-1.4	-4.4	0.0	-19.3	-9.3	-10.5
1946	0.0	0.0	0.0	0.0	0.0	0.4	-2.0	0.0	0.0	-2.0	-4.0	-3.3	-4.5	0.0	-15.5	-3.4	-12.5
1947	0.0	0.0	0.0	0.0	0.0	0.2	-2.9	-2.1	0.0	-0.6	-4.3	-1.5	-5.1	0.0	-16.5	-5.5	-11.2
1948	0.0	0.0	0.0	0.0	0.0	0.4	-3.0	-2.0	0.0	0.0	-5.0	-1.7	-5.0	0.0	-16.3	-5.0	-11.7
1949	0.0	0.0	0.0	0.0	0.0	0.0	-3.6	-1.6	0.0	-1.7	-6.7	-1.3	-4.7	0.0	-19.6	-6.3	-13.3
1950	0.0	0.0	0.0	0.0	0.0	0.0	-3.2	-1.0	0.0	0.0	-5.1	-2.0	-5.2	0.0	-16.5	-4.2	-12.3
1951	0.0	0.0	0.0	0.0	0.0	0.0	-2.7	0.0	0.0	-2.9	-4.8	-1.6	-5.1	0.0	-17.2	-4.7	-12.5
1952	0.0	0.0	0.0	0.0	0.0	0.0	-0.7	0.0	0.0	-0.6	-4.1	-2.2	-5.3	0.0	-13.0	-1.1	-11.8
1953	0.0	0.0	0.0	0.0	0.0	0.4	-2.8	-2.7	-1.0	0.0	-5.4	-1.8	-5.5	0.0	-18.9	-6.5	-12.8
1954	0.0	0.0	0.0	0.0	0.0	0.2	-3.6	-2.1	0.0	0.0	-3.1	-1.6	-5.1	0.0	-15.3	-5.7	-9.8
1955	0.0	0.0	0.0	0.0	0.0	0.4	-3.0	-2.4	-6.6	0.0	-4.4	-1.6	-4.8	0.0	-22.3	-12.0	-10.8
1956	0.0	0.0	0.0	0.0	0.0	0.0	-1.4	0.0	0.0	0.0	-4.2	-1.6	-5.0	0.0	-12.3	-1.4	-10.8
1957	0.0	0.0	0.0	0.0	0.0	0.0	-4.1	-2.0	0.0	-0.3	-4.3	-1.5	-5.1	0.0	-17.4	-6.3	-11.1
1958	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	-2.0	0.0	0.0	-3.8	-1.5	-4.6	0.0	-14.9	-5.0	-9.9
1959	0.0	0.0	0.0	0.0	0.0	0.0	-3.5	-1.9	-2.9	-0.3	-4.1	-1.4	-4.6	0.0	-18.7	-8.5	-10.2
1960	0.0	0.0	0.0	0.0	0.0	0.4	-2.6	-0.8	-6.2	-3.3	-3.5	-1.5	-5.4	0.0	-22.9	-11.9	-11.5
1961	0.0	0.0	0.0	0.0	0.0	0.2	-3.3	-2.3	-3.3	0.0	-2.9	-0.5	-3.1	0.0	-15.3	-8.9	-6.5
1962	0.0	0.0	0.0	0.0	0.0	0.5	-1.2	0.0	-1.5	-0.3	-4.7	-1.7	-5.7	0.0	-14.7	-2.9	-12.3
1963	0.0	0.0	0.0	0.0	0.0	0.4	-3.0	-2.4	-5.4	-3.9	-4.7	-1.5	-4.5	0.0	-25.1	-13.4	-12.1
1964	0.0	0.0	0.0	0.0	0.0	0.5	-4.6	-2.6	-5.1	0.0	-5.0	-1.8	-5.3	0.0	-23.8	-12.2	-12.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-0.4	0.0	-0.3	-4.4	-2.1	-6.1	0.0	-17.0	-4.3	-12.7
1966	0.0	0.0	0.0	0.0	0.0	0.5	-3.2	-1.7	-6.9	-4.9	-3.2	-0.8	-3.7	0.0	-23.8	-15.0	-9.3
1967	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	-2.0	-0.5	0.0	-5.1	-1.6	-5.1	0.0	-17.3	-5.5	-11.8
1968	0.0	0.0	0.0	0.0	0.0	0.2	-2.7	-1.6	-7.4	-0.8	-3.2	-1.4	-5.3	0.0	-22.3	-12.3	-10.1
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-2.9	-1.3	-3.8	0.0	-8.1	-0.1	-8.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	-2.7	-1.8	-3.6	0.0	-2.0	-1.7	-5.5	0.0	-17.2	-8.0	-9.2
1971	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	0.0	0.0	0.0	-3.4	-1.7	-4.8	0.0	-12.1	-2.2	-9.9
1972	0.0	0.0	0.0	0.0	0.0	0.0	-1.6	0.0	0.0	0.0	-4.3	-1.6	-4.7	0.0	-12.2	-1.6	-10.5
1973	0.0	0.0	0.0	0.0	0.0	0.4	-1.8	-1.4	-7.3	-5.0	-2.9	-0.8	-3.5	0.0	-22.4	-14.0	-8.9
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	-1.6	-4.6	0.0	-8.8	0.0	-8.8
1975	0.0	0.0	0.0	0.0	0.0	0.1	-3.1	-2.5	0.0	0.0	-3.9	-2.2	-6.5	0.0	-18.1	-5.7	-12.6
1976	0.0	0.0	0.0	0.0	0.0	0.0	-3.1	-0.8	0.0	-1.9	-4.9	-1.9	-5.6	0.0	-18.2	-5.2	-13.1
1977	0.0	0.0	0.0	0.0	0.0	0.5	-4.6	-5.8	-13.3	-6.0	-0.8	0.3	-1.6	0.0	-31.4	-27.8	-4.1
1978	0.0	0.0	0.0	0.0	0.0	0.4	-3.7	-1.4	-0.5	-4.1	-5.8	-1.8	-6.0	0.0	-22.9	-8.3	-15.0
1979	0.0	0.0	0.0	0.0	0.0	0.2	-2.8	-2.8	-1.9	-4.9	-3.1	-1.2	-4.5	0.0	-21.0	-10.8	-10.4
1980	0.0	0.0	0.0	0.0	0.0	0.5	-2.3	-2.2	0.0	-3.3	-5.7	-1.4	-4.9	0.0	-19.2	-6.7	-13.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	-5.3	-7.1	-11.0	0.0	-4.0	-1.3	-4.6	0.0	-33.1	-23.4	-9.8
1982	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-1.5	0.0	0.0	-4.9	-1.9	-5.1	0.0	-17.2	-5.2	-11.9
1983	0.0	0.0	0.0	0.0	0.0	0.0	-3.4	-1.9	0.0	0.0	-3.3	-1.8	-5.3	0.0	-15.6	-5.3	-10.3
1984	0.0	0.0	0.0	0.0	0.0	0.0	-3.3	-0.7	0.0	0.0	-5.5	-2.1	-5.5	0.0	-17.2	-4.0	-13.2
1985	0.0	0.0	0.0	0.0	0.0	0.4	-4.7	-2.0	-0.2	-5.1	-3.0	-1.6	-4.0	0.0	-20.2	-10.2	-10.4
1986	0.0	0.0	0.0	0.0	0.0	0.0	-3.7	-1.3	-5.3	-1.9	-6.8	-1.4	-4.7	0.0	-25.0	-11.5	-13.5
1987	0.0	0.0	0.0	0.0	0.0	0.4	-5.4	-6.7	-12.3	-3.9	-2.4	-0.8	-3.3	0.0	-34.3	-27.0	-7.7
1988	0.0	0.0	0.0	0.0	0.0	0.5	-5.5	-7.4	-13.4	-6.9	-2.2	0.0	-2.4	0.0	-37.3	-30.9	-6.9
1989	0.0	0.0	0.0	0.0	0.0	0.5	-3.8	-1.8	-7.0	-5.0	-3.5	-1.0	-4.4	0.0	-25.9	-15.9	-10.5
1990	0.0	0.0	0.0	0.0	0.0	0.4	-5.7	-6.0	-11.3	-3.9	-3.4	-1.0	-4.6	0.0	-35.4	-25.6	-10.2
1991	0.0	0.0	0.0	0.0	0.0	0.4	-5.4	-5.7	-10.4	-4.9	-4.0	-1.2	-4.2	0.0	-35.3	-24.7	-11.0
1992	0.0	0.0	0.0	0.0	0.0	0.4	-5.5	-6.3	-12.8	-3.3	-2.3	-0.3	-2.3	0.0	-32.3	-26.8	-5.9
1993	0.0	0.0	0.0	0.0	0.0	0.5	-4.0	-2.6	-1.6	-4.2	-5.3	-2.1	-6.5	0.0	-25.8	-11.0	-15.3
1994	0.0	0.0	0.0	0.0	0.0	0.5	-5.9	-7.8	-12.6	-6.1	-2.7	-0.4	-2.8	0.0	-37.8	-30.4	-7.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	-3.9	-2.7	-6.1	-0.2	-7.1	-1.9	-5.3	0.0	-27.1	-12.7	-14.3
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.4	-1.7	-4.8	0.0	-10.8	0.0	-10.8
1997	0.0	0.0	0.0	0.0	0.0	0.0	-1.8	0.0	0.0	0.0	-4.5	-2.3	-5.9	0.0	-14.4	-1.8	-12.6
1998	0.0	0.0	0.0	0.0	0.0	0.4	-2.9	-2.6	0.0	0.0	-1.8	-1.6	-4.2	0.0	-12.6	-5.5	-7.5
1999	0.0	0.0	0.0	0.0	0.0	0.2	-2.7	-1.3	0.0	0.0	-4.9	-1.7	-4.9	0.0	-15.4	-4.0	-11.6
2000	0.0	0.0	0.0	0.0	0.0	0.4	-2.3	0.0	-4.3	-4.1	-3.4	-1.0	-3.9	0.0	-18.7	-9.4	-9.7
2001	0.0	0.0	0.0	0.0	0.0	0.5	-5.7	-6.3	-14.6	-7.0	-2.9	-0.6	-3.2	0.0	-39.9	-31.4	-9.0
2002	0.0	0.0	0.0	0.0	0.0	0.5	-3.9	-2.4	-7.7	-0.7	-3.9	-1.3	-4.9	0.0	-24.3	-14.4	-10.3
2003	0.0	0.0	0.0	0.0	0.0	0.4	-4.0	-2.8	-7.0	-3.0	-5.8	-0.8	-3.8	0.0	-26.8	-15.9	-11.4
2004	0.0	0.0	0.0	0.0	0.0	0.4	-3.3	-2.6	-7.6	-4.9	-3.8	-1.0	-5.1	0.0	-28.0	-16.8	-11.6
2005	0.0	0.0	0.0	0.0	0.0	0.5	-5.7	-7.0	-10.4	-5.8	-3.4	-0.7	-3.4	0.0	-36.0	-27.0	-9.5
2006	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	-3.3	-0.7	-3.4	0.0	-7.2	0.0	-7.3
2007	0.0	0.0	0.0	0.0	0.0	0.2	-2.4	-2.1	-5.9	-4.9	-2.8	-0.4	-3.1	0.0	-21.4	-13.6	-7.9
2008	0.0	0.0	0.0	0.0	0.0	0.5	-3.1	-2.4	0.0	0.0	-5.4	-1.5	-5.2	0.0	-17.2	-5.5	-12.1
average	**0**	**0**	**0**	**0**	**0**	**0**	**-3**	actual spill (2)	**-4**	**-2**	**-4**	**-1**	**-4**	**0**	**-22**	**-12**	Page 10

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7300	8020	8308	5907	6490	5953	5342	6540
1930	5324	6931	6940	5909	6512	6016	5893	7816	8326	5667	7898	6821	5940	5149	6495
1931	5384	7209	7179	5493	5210	5541	6388	5837	9085	7086	7218	6823	5644	4992	6404
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9002	8466	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7837	7782	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7042	10905	11803	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5769	8984	7025	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11242	8837	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8162	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8835	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7561	7979	6711	5787	5103	6897
1942	5439	7501	8674	8727	7818	7851	6940	8870	9772	10230	10021	7945	6775	6244	8131
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7354	7603	5565	6714	6343	5578	4644	6242
1945	5431	6868	6982	5454	5910	5800	5103	3876	10497	11131	6405	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9335	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11339	12577	12746	10642	9210	9278	6635	9902
1949	5407	6747	7923	8933	7794	10778	10399	11078	11866	11532	6587	6183	5470	4774	8243
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8118	8328	11228	12896	10268	7759	7065	5583	8282
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7395	8069	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10641	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10181	8354	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7592	8097	10318	10422	9402	7757	6680	5792	8603
1964	5131	6428	8088	8105	7485	6803	10478	8089	11340	12829	11249	9181	8920	6467	8524
1965	6174	7598	11453	14282	13488	11776	8882	12185	11862	12006	9852	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9746	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8222	6170	10657	12210	10338	8732	7692	5695	9009
1968	5403	7312	8582	10750	9605	9730	7531	7328	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8793	6875	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4305	6859	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8006	8353	10875	12735	11928	9332	8346	6199	8830
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11773	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7097	7508	4741	6678	6418	5408	4227	6229
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9807	9895	7262	6398	6586	8493
1979	5785	7008	7541	8595	6335	8519	7549	8542	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12211	7473	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10169	11785	9204	5553	5617	5143	5011	7705
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7995	10400	9153	6893	6070	5301	4845	7298
1988	5268	6897	6444	5975	5454	6104	6098	8060	8962	7373	8217	6765	5872	4820	6581
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9261	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11616	10592	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7120	8688	6711	6764	6108	5384	4613	6716
1993	5414	6809	7458	6030	5299	6968	6773	8376	10822	10031	7809	7122	6354	5103	7183
1994	5156	7360	7375	6097	6439	5928	5667	7868	10226	8947	7641	6546	5619	5139	6931
1995	5191	6284	7526	6832	10055	10237	8153	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	11037	9197	9004	5444	11060
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7567	8731	12189	12784	9358	8945	7265	5401	8954
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7317	8355	4326	6829	6233	5405	4059	6211
2002	4716	6244	7770	6583	6876	6704	9028	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9183	8950	10213	11891	6617	5833	5241	4725	7442
2004	5513	7060	8829	6781	5971	8259	8091	8168	10182	10151	6527	6180	5744	6545	7495
2005	5504	6966	8883	8939	8404	7096	6352	8112	11023	10119	7349	6937	5804	5234	7757
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10106	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7977	6498	12166	13324	9656	7510	7391	5291	8110

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7278	7999	8297	5907	6490	5953	5342	6536
1930	5324	6931	6940	5909	6512	6016	5902	7809	8313	5657	7898	6821	5940	5149	6493
1931	5384	7209	7179	5493	5210	5541	6388	5815	9085	7075	7218	6823	5644	4992	6402
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9011	8460	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7846	7776	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7048	10911	11802	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5747	8984	7024	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11250	8830	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8170	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8844	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7550	7979	6711	5787	5103	6896
1942	5439	7501	8674	8727	7818	7851	6949	8870	9772	10231	10021	7945	6775	6244	8132
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7332	7581	5553	6714	6343	5578	4644	6239
1945	5431	6868	6982	5454	5910	5800	5112	3890	10497	11134	6400	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9341	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11354	12577	12746	10642	9210	9278	6635	9903
1949	5407	6747	7923	8933	7794	10778	10399	11078	11829	11532	6587	6183	5470	4774	8240
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8127	8329	11228	12896	10268	7759	7065	5583	8283
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7403	8063	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10647	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10190	8348	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7601	8091	10318	10449	9405	7757	6680	5792	8605
1964	5131	6428	8088	8105	7485	6803	10485	8089	11340	12829	11249	9181	8920	6467	8525
1965	6174	7598	11453	14282	13488	11776	8888	12185	11862	12002	9861	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9747	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8231	6163	10657	12210	10338	8732	7692	5695	9010
1968	5403	7312	8582	10750	9605	9730	7540	7321	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8802	6876	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4314	6841	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8013	8353	10875	12735	11928	9332	8346	6199	8831
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11774	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7075	7486	4741	6678	6418	5408	4227	6226
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9817	9895	7262	6398	6586	8494
1979	5785	7008	7541	8595	6335	8519	7558	8536	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12212	7482	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10187	11785	9203	5553	5617	5143	5011	7706
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7973	10400	9153	6893	6070	5301	4845	7297
1988	5268	6897	6444	5975	5454	6104	6098	8039	8941	7362	8217	6765	5872	4820	6578
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9252	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11612	10596	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7098	8688	6699	6764	6108	5384	4613	6714
1993	5414	6809	7458	6030	5299	6968	6780	8376	10822	10037	7809	7122	6354	5103	7184
1994	5156	7360	7375	6097	6439	5928	5667	7847	10226	8936	7641	6546	5619	5139	6930
1995	5191	6284	7526	6832	10055	10237	8162	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11891	11374	12647	11037	9197	9004	5444	11058
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7576	8731	12189	12784	9358	8945	7265	5401	8955
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7296	8334	4326	6829	6233	5405	4059	6208
2002	4716	6244	7770	6583	6876	6704	9031	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9191	8950	10213	11891	6617	5833	5241	4725	7443
2004	5513	7060	8829	6781	5971	8259	8100	8162	10182	10148	6520	6180	5744	6545	7494
2005	5504	6966	8883	8939	8404	7096	6352	8090	11023	10119	7349	6937	5804	5234	7756
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10115	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7986	6491	12166	13324	9656	7510	7391	5291	8110

actual spill - base case

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	0	0	22	21	11	0	0	0	0	4
1930	0	0	0	0	0	0	-9	7	13	10	0	0	0	0	2
1931	0	0	0	0	0	0	0	22	0	11	0	0	0	0	2
1932	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1933	0	0	0	0	0	0	-9	6	0	0	0	0	0	0	0
1934	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1935	0	0	0	0	0	0	-9	6	0	0	0	0	0	0	0
1936	0	0	0	0	0	0	-6	-6	1	0	0	0	0	0	0
1937	0	0	0	0	0	0	0	22	0	1	0	0	0	0	0
1938	0	0	0	0	0	0	0	0	0	-8	7	0	0	0	0
1939	0	0	0	0	0	0	-8	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	-9	0	0	0	0	0	0	0	0
1941	0	0	0	0	0	0	0	0	0	11	0	0	0	0	1
1942	0	0	0	0	0	0	-9	0	0	-1	0	0	0	0	-1
1943	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	22	22	12	0	0	0	0	3
1945	0	0	0	0	0	0	-9	-14	0	-3	5	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	-6	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	-15	0	0	0	0	0	0	-1
1949	0	0	0	0	0	0	0	0	37	0	0	0	0	0	3
1950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	-9	-1	0	0	0	0	0	0	-1
1954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	-8	6	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	-6	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	-9	6	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	-9	6	0	-27	-3	0	0	0	-2
1964	0	0	0	0	0	0	-7	0	0	0	0	0	0	0	-1
1965	0	0	0	0	0	0	-6	0	0	4	-9	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0
1967	0	0	0	0	0	0	-9	7	0	0	0	0	0	0	-1
1968	0	0	0	0	0	0	-9	7	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	-9	-1	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	-9	18	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	-7	0	0	0	0	0	0	0	-1
1976	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0
1977	0	0	0	0	0	0	0	22	22	0	0	0	0	0	3
1978	0	0	0	0	0	0	0	0	0	-10	0	0	0	0	-1
1979	0	0	0	0	0	0	-9	6	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	-1	-9	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	-18	0	1	0	0	0	0	-1
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	22	0	0	0	0	0	0	1
1988	0	0	0	0	0	0	0	21	21	11	0	0	0	0	3
1989	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	4	-4	0	0	0	0
1992	0	0	0	0	0	0	0	22	0	12	0	0	0	0	2
1993	0	0	0	0	0	0	-7	0	0	-6	0	0	0	0	-1
1994	0	0	0	0	0	0	0	21	0	11	0	0	0	0	1
1995	0	0	0	0	0	0	-9	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	42	0	0	0	0	0	0	2
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	-9	0	0	0	0	0	0	0	-1
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	21	21	0	0	0	0	0	3
2002	0	0	0	0	0	0	-3	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	-8	0	0	0	0	0	0	0	-1
2004	0	0	0	0	0	0	-9	6	0	3	7	0	0	0	1
2005	0	0	0	0	0	0	0	22	0	0	0	0	0	0	1
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	-9	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	-9	7	0	0	0	0	0	0	0
average	**0**	**0**	**0**	**0**	**0**	**0**	**-3**	new gascaps	**2**	**1**	**0**	**0**	**0**	**0**	**0**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70D66	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
average								**newgascaps**					0	

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total
1929	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.9
1930	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.3	0.2	0.0	0.0	0.0	0.0	0.5
1931	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.5
1932	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1933	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1934	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1935	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1936	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1937	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3
1938	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0
1939	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1940	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1941	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
1942	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1943	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1944	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.3	0.0	0.0	0.0	0.0	1.0
1945	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	0.0	0.1	0.0	0.0	0.0	-0.2
1946	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1947	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1948	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1949	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
1950	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1951	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1952	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1953	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1954	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1955	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	-0.5	-0.1	0.0	0.0	0.0	-0.6
1964	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	-0.2	0.0	0.0	0.0	-0.2
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.7
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.2
1979	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	-0.2
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.5
1993	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.2
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.7
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
2004	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.2
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
2008	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
average	**0**	**0**	**0**	**0**	**0**	**0**	**0**	new gascaps	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Q:\RATES\12_RateCase15_final\OPERspilltoGasCap

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	3892	5697	6118	6814	5126	5825	5337	5342	6008
1930	5324	6931	6940	5909	6512	6016	4187	6419	6728	4606	6807	6146	5322	5149	5997
1931	5384	7209	7179	5493	5210	5541	3996	4523	7374	5939	6472	6229	5294	4992	5909
1932	5014	6392	6938	4717	4707	7632	9865	10801	12395	11989	6603	6891	5897	5732	7404
1933	5420	6187	7670	9878	10074	9166	6491	7139	9821	13181	10279	7696	7598	5689	8478
1934	6178	9912	13203	14085	13427	11257	10863	11114	10725	9083	7267	5753	5382	5068	9710
1935	5516	5871	8108	9388	9485	9263	5518	6458	9073	7785	8352	7648	5760	5017	7542
1936	5240	6782	6991	6040	5801	6331	4803	10166	12167	10398	6419	6148	5157	4969	7024
1937	5210	7167	7105	6114	5428	5789	4078	4381	7254	5582	6029	6024	5194	4920	5877
1938	5418	6270	8548	8641	8425	9657	7401	11010	11219	10417	7497	5934	5244	5586	8037
1939	5482	6668	6812	7363	7376	7241	5629	8048	9973	5984	6301	5742	5163	5164	6721
1940	5680	7272	8589	7428	6282	10345	6268	7113	8820	6441	6261	5736	5007	4966	7023
1941	5563	6710	8274	6412	6482	6347	4174	5664	7750	6063	6762	5866	5032	5103	6324
1942	5439	7501	8674	8727	7818	7851	4583	7746	8473	9147	8781	6882	5836	6244	7599
1943	5522	6002	7834	9706	9983	9734	11869	12333	11345	12415	7308	6439	5633	5182	8581
1944	5007	6796	6854	6884	6599	5870	3763	5738	5780	4326	5637	5647	4952	4644	5704
1945	5431	6868	6982	5454	5910	5800	3696	3355	9391	10290	5321	6105	5357	5072	6316
1946	5140	6483	8422	8727	8773	8793	8439	11618	11431	10707	8220	7384	6263	5702	8266
1947	4993	6858	11241	11573	11266	10895	6825	7730	11257	11392	8625	7018	5587	5571	8929
1948	7754	8621	9630	11795	10123	8635	6926	10422	12739	12746	9666	7951	7791	6635	9575
1949	5407	6747	7923	8933	7794	10779	8005	10257	12168	10870	5386	5444	4808	4774	7921
1950	5236	6647	8074	11301	11163	11064	9408	9437	11096	11857	8680	8138	7181	5758	8984
1951	6061	8997	11389	13410	13333	12165	9381	10750	11279	9998	9533	7898	7226	5727	9945
1952	7181	7768	9621	11120	9794	9831	10020	11985	12227	11228	7949	6600	5420	4867	9048
1953	5043	6551	7048	8802	8165	8172	5714	6950	10611	13026	9098	6561	5869	5583	7884
1954	5295	7053	8874	10683	10624	9927	6971	8289	11177	11778	10936	8538	8001	8584	9229
1955	5439	7997	8525	7697	7177	6435	5107	6715	9020	12565	11023	8000	6853	5335	7883
1956	5556	8494	11270	13081	12791	11232	9403	12055	11795	12543	9704	7908	6876	5576	10004
1957	5528	6688	9001	9321	7476	9117	9709	8069	13303	13632	8034	6669	5408	5401	8542
1958	5283	6946	7458	9431	8819	9096	7163	9172	12150	12087	7087	5938	5600	5387	8134
1959	5401	7425	10676	12647	11972	10390	8272	8212	10453	12264	8057	7978	7740	8643	9486
1960	8817	9974	10648	10862	8650	8921	11773	10338	9671	10574	8105	6828	5426	5273	9055
1961	5407	6737	8214	9996	9985	9829	7706	7063	10869	12496	7897	6773	5903	5243	8356
1962	5183	6854	7493	9275	9040	6809	10121	11501	10693	11470	5576	6267	5429	5122	7829
1963	5714	7888	10227	10726	9100	8565	5243	6744	9103	9415	8099	6678	5718	5792	8067
1964	5131	6428	8088	8105	7485	6803	7968	6731	10280	12790	10523	7901	7403	6467	8093
1965	6174	7598	11453	14282	13488	11783	6271	11901	12073	11792	8674	7835	6927	5323	9911
1966	5606	7321	8590	9056	8277	6840	9662	7932	8380	8626	8294	7397	5689	5456	7642
1967	5225	6573	8419	11670	11375	10649	5831	4993	9939	12210	9318	7548	6424	5695	8611
1968	5403	7312	8582	10750	9605	9730	5277	6115	7346	11283	8637	7749	6553	7177	8217
1969	6360	8627	9663	12719	12869	10110	9675	11206	11601	11031	8669	7181	6304	5524	9508
1970	5278	7066	7371	9461	8957	8431	6360	5621	9582	12626	6930	5713	5164	5302	7691
1971	5161	6680	7683	12850	13453	12038	9011	10340	12099	12455	10242	8190	7628	6172	9681
1972	5575	6873	8805	12437	12961	12746	10875	9237	12284	12528	10579	8302	7738	6847	9969
1973	5555	7016	8335	9373	7810	6379	3451	5737	7510	6014	6099	5966	5001	5028	6599
1974	5377	6042	9805	14774	14456	12252	10424	11289	11467	11997	10994	8078	7693	6548	10184
1975	4991	6857	7720	8816	9746	9141	5560	7026	10726	12735	11220	7996	6713	6199	8476
1976	6412	8976	12577	12339	12264	11373	10214	10997	12400	11114	10082	8845	8450	9149	10491
1977	5650	6981	7010	6878	6916	6248	3689	5607	5862	4144	6097	5946	5092	4227	5848
1978	4832	5872	9304	9104	9174	8785	9685	8252	10681	8741	8674	6155	5386	6586	8036
1979	5785	7008	7541	8595	6335	8519	5268	7200	10829	6592	5530	5568	4976	5240	6969
1980	5320	6905	6475	7790	7233	6231	6390	9329	12668	11468	6139	6056	5111	5595	7433
1981	5462	6871	10615	11303	10292	9018	4134	6883	9494	13045	9105	7896	7627	6162	8715
1982	5278	7255	9130	10738	13112	12833	8731	9197	12148	12514	9607	8041	7802	7400	9721
1983	6257	7358	9478	11328	10873	12035	8436	8017	11538	11578	9697	8008	7758	6022	9355
1984	5398	9267	9426	10559	10539	9989	10569	11068	11338	13259	9653	7985	6281	6017	9437
1985	5379	7213	8412	8591	8105	7875	7292	9229	11185	8084	4960	5109	4663	5011	7325
1986	5906	8400	8458	9396	10334	13093	9175	10084	9501	11189	7108	6392	5330	5333	8670
1987	5067	6621	8571	8184	6217	8310	4633	6195	8995	8156	6044	5544	4850	4845	6812
1988	5268	6897	6444	5975	5454	6104	4021	6308	7277	5930	7193	6126	5366	4820	6028
1989	5146	6307	8210	6579	6367	7510	7365	10712	10176	8106	5480	5712	5084	5080	6952
1990	5229	7251	9006	9959	9839	9348	6096	11140	9738	11162	7433	7309	6213	5278	8290
1991	4853	9108	10030	11163	10769	9887	7641	7606	10381	10882	9927	7944	7432	5443	8972
1992	5039	6799	7232	7742	6326	8187	4204	5495	7029	5737	5885	5634	4968	4613	6235
1993	5414	6809	7458	6030	5299	6968	4403	7091	10168	8926	6462	5955	5164	5103	6672
1994	5156	7360	7375	6097	6439	5928	3904	6013	8710	7667	6585	5968	5170	5139	6416
1995	5191	6284	7526	6832	10055	10245	5563	6376	8646	11266	7494	5966	5219	5684	7547
1996	6488	10185	14141	14420	13243	13287	9407	12180	11639	12855	10276	7924	7551	5444	10874
1997	5191	7086	9402	14166	14378	13415	9814	12317	12090	12934	10576	8080	7758	7148	10424
1998	8063	8511	9183	8622	9172	7934	5166	7445	12550	12766	8194	7756	6027	5401	8630
1999	5152	6237	8880	12300	12279	12153	7807	9288	11042	12982	10251	8306	7807	6595	9527
2000	5450	9391	10217	9904	9501	9007	9223	11381	9290	8772	8048	7088	5012	5250	8423
2001	5227	6858	6957	6891	6601	6259	3666	5736	6558	3733	5954	5682	4949	4059	5762
2002	4716	6244	7770	6583	6876	6704	6403	10240	8599	11798	9431	6985	5699	5291	7386
2003	4946	7244	7101	6150	6405	9422	6608	7700	8902	11169	5531	5295	4747	4725	6978
2004	5513	7060	8829	6781	5971	8259	5608	6878	8893	9056	5500	5545	5060	6545	6998
2005	5504	6966	8883	8939	8404	7096	4271	6354	9555	8910	6232	6245	5204	5234	7226
2006	5331	6895	8209	10292	9815	9509	10867	11630	12364	11576	6936	6579	4965	4952	8562
2007	4768	7200	8322	10004	8010	10986	7960	8175	9840	8355	7985	6020	5052	4600	7811
2008	5529	6826	7707	7619	7486	7001	5576	5176	12215	13333	8442	6424	6128	5291	7760

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7300	8020	8308	5907	6490	5953	5342	6540
1930	5324	6931	6940	5909	6512	6016	5893	7816	8326	5667	7898	6821	5940	5149	6495
1931	5384	7209	7179	5493	5210	5541	6388	5837	9085	7086	7218	6823	5644	4992	6404
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9002	8466	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7837	7782	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7042	10905	11803	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5769	8984	7025	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11242	8837	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8162	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8835	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7561	7979	6711	5787	5103	6897
1942	5439	7501	8674	8727	7818	7851	6940	8870	9772	10230	10021	7945	6775	6244	8131
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7354	7603	5565	6714	6343	5578	4644	6242
1945	5431	6868	6982	5454	5910	5800	5103	3876	10497	11131	6405	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9335	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11339	12577	12746	10642	9210	9278	6635	9902
1949	5407	6747	7923	8933	7794	10778	10399	11078	11866	11532	6587	6183	5470	4774	8243
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8118	8328	11228	12896	10268	7759	7065	5583	8282
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7395	8069	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10641	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10181	8354	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7592	8097	10318	10422	9402	7757	6680	5792	8603
1964	5131	6428	8088	8105	7485	6803	10478	8089	11340	12829	11249	9181	8920	6467	8524
1965	6174	7598	11453	14282	13488	11776	8882	12185	11862	12006	9852	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9746	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8222	6170	10657	12210	10338	8732	7692	5695	9009
1968	5403	7312	8582	10750	9605	9730	7531	7328	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8793	6875	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4305	6859	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8006	8353	10875	12735	11928	9332	8346	6199	8830
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11773	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7097	7508	4741	6678	6418	5408	4227	6229
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9807	9895	7262	6398	6586	8493
1979	5785	7008	7541	8595	6335	8519	7549	8542	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12211	7473	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10169	11785	9204	5553	5617	5143	5011	7705
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7995	10400	9153	6893	6070	5301	4845	7298
1988	5268	6897	6444	5975	5454	6104	6098	8060	8962	7373	8217	6765	5872	4820	6581
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9261	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11616	10592	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7120	8688	6711	6764	6108	5384	4613	6716
1993	5414	6809	7458	6030	5299	6968	6773	8376	10822	10031	7809	7122	6354	5103	7183
1994	5156	7360	7375	6097	6439	5928	5667	7868	10226	8947	7641	6546	5619	5139	6931
1995	5191	6284	7526	6832	10055	10237	8153	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	11037	9197	9004	5444	11060
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7567	8731	12189	12784	9358	8945	7265	5401	8954
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7317	8355	4326	6829	6233	5405	4059	6211
2002	4716	6244	7770	6583	6876	6704	9028	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9183	8950	10213	11891	6617	5833	5241	4725	7442
2004	5513	7060	8829	6781	5971	8259	8091	8168	10182	10151	6527	6180	5744	6545	7495
2005	5504	6966	8883	8939	8404	7096	6352	8112	11023	10119	7349	6937	5804	5234	7757
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10106	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7977	6498	12166	13324	9656	7510	7391	5291	8110

spill to 115/120 gas cap - base case

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	0	-1487	-1603	-1902	-1494	-781	-665	-616	0	-532
1930	0	0	0	0	0	0	-1706	-1397	-1598	-1061	-1091	-675	-618	0	-498
1931	0	0	0	0	0	0	-2392	-1314	-1711	-1147	-746	-594	-350	0	-495
1932	0	0	0	0	0	0	-2000	-622	-142	-357	-1313	-1035	-947	0	-344
1933	0	0	0	0	0	0	-2511	-1327	-1004	69	-529	-1099	-1342	0	-386
1934	0	0	0	0	0	0	-1594	-527	-788	-796	-950	-563	-514	0	-346
1935	0	0	0	0	0	0	-2319	-1324	-1131	-1220	-1130	-1039	-925	0	-526
1936	0	0	0	0	0	0	-2239	-739	364	-728	-1200	-814	-613	0	-313
1937	0	0	0	0	0	0	-1629	-1388	-1730	-1443	-995	-710	-539	0	-526
1938	0	0	0	0	0	1	-2461	-530	14	-825	-1340	-955	-778	0	-377
1939	0	0	0	0	0	0	-2533	-1244	-904	-1221	-1013	-632	-550	0	-469
1940	0	0	0	0	0	2	-2567	-1254	-1308	-1377	-939	-673	-504	0	-509
1941	0	0	0	0	0	0	-2036	-1396	-1617	-1498	-1217	-845	-755	0	-573
1942	0	0	0	0	0	0	-2357	-1124	-1299	-1083	-1240	-1063	-939	0	-532
1943	0	0	0	0	0	1	226	0	49	64	-1374	-1313	-1300	0	-209
1944	0	0	0	0	0	0	-1674	-1616	-1823	-1239	-1077	-696	-626	0	-538
1945	0	0	0	0	0	0	-1407	-521	-1106	-841	-1084	-957	-803	0	-409
1946	0	0	0	0	0	0	-2140	-343	-160	-689	-1259	-1329	-1249	0	-388
1947	0	0	0	0	0	1	-2510	-1203	-378	-573	-1193	-1117	-938	0	-420
1948	0	0	0	0	0	0	-2528	-917	162	0	-976	-1259	-1487	0	-327
1949	0	0	0	0	0	1	-2394	-821	302	-662	-1201	-739	-662	0	-322
1950	0	0	0	0	0	16	-2082	-834	-340	0	-1104	-1271	-1580	0	-362
1951	0	0	0	0	0	0	-1944	-423	-148	-843	-964	-1210	-1421	0	-373
1952	0	0	0	0	0	0	-1337	-33	0	-636	-1275	-1188	-1001	0	-309
1953	0	0	0	0	0	0	-2404	-1378	-617	130	-1170	-1198	-1196	0	-398
1954	0	0	0	0	0	1	-2563	-1106	-254	-135	-382	-1072	-1540	0	-327
1955	0	0	0	0	0	0	-2288	-1354	-1307	-85	-472	-1182	-1360	0	-415
1956	0	0	0	0	0	17	-1760	14	0	-34	-843	-1222	-1468	0	-259
1957	0	0	0	0	0	1	-2088	-1155	307	-54	-1279	-1112	-927	0	-306
1958	0	0	0	0	0	0	-2492	-949	236	-147	-1289	-955	-927	0	-323
1959	0	0	0	0	0	0	-2369	-1065	-514	-239	-1190	-1186	-1463	0	-418
1960	0	0	0	0	0	0	-1022	-632	-1071	-803	-1167	-1082	-889	0	-406
1961	0	0	0	0	0	0	-2475	-1291	-744	-279	-1132	-925	-783	0	-410
1962	0	0	0	0	0	0	-1791	-155	-723	-511	-1194	-1094	-932	0	-371
1963	0	0	0	0	0	0	-2349	-1353	-1215	-1007	-1303	-1079	-962	0	-536
1964	0	0	0	0	0	0	-2510	-1358	-1060	-39	-726	-1280	-1517	0	-431
1965	0	0	0	0	0	7	-2611	-284	211	-214	-1178	-1337	-1655	0	-346
1966	0	0	0	0	0	0	-2102	-1138	-1323	-1120	-1091	-1016	-745	0	-505
1967	0	0	0	0	0	0	-2391	-1177	-718	0	-1020	-1184	-1268	0	-398
1968	0	0	0	0	0	0	-2254	-1213	-1498	-607	-1086	-1130	-1402	0	-519
1969	0	0	0	0	0	4	-1394	135	0	-483	-1111	-1088	-1107	0	-279
1970	0	0	0	0	0	1	-2433	-1254	-1083	111	-1351	-855	-810	0	-420
1971	0	0	0	0	0	15	-2148	-699	0	-31	-894	-1266	-1547	0	-314
1972	0	0	0	0	0	0	-1321	-715	95	0	-559	-1166	-1553	0	-238
1973	0	0	0	0	0	0	-854	-1122	-1448	-1360	-1032	-684	-540	0	-455
1974	0	0	0	0	0	0	-476	286	0	0	-464	-1306	-1622	0	-172
1975	0	0	0	0	0	1	-2446	-1327	-149	0	-708	-1336	-1633	0	-354
1976	0	0	0	0	0	4	-1817	-585	268	-659	-778	-1017	-1459	0	-300
1977	0	0	0	0	0	0	-1176	-1490	-1646	-597	-581	-472	-316	0	-381
1978	0	0	0	0	0	0	-1930	-1094	-603	-1066	-1221	-1107	-1012	0	-457
1979	0	0	0	0	0	0	-2281	-1342	-801	-1407	-889	-554	-612	0	-457
1980	0	0	0	0	0	0	-2456	-1067	-111	-743	-1334	-858	-701	0	-394
1981	0	0	0	0	0	0	-2067	-1821	-1500	-304	-1000	-1102	-1362	0	-503
1982	0	0	0	0	0	0	-2302	-959	295	-74	-1018	-1308	-1560	0	-324
1983	0	0	0	0	0	15	-2150	-1067	150	-30	-1009	-1280	-1573	0	-328
1984	0	0	0	0	0	0	-1723	-512	-414	273	-1013	-1321	-1524	0	-311
1985	0	0	0	0	0	0	-2575	-940	-600	-1120	-593	-508	-480	0	-380
1986	0	0	0	0	0	0	-2121	-811	-1174	-646	-1410	-972	-770	0	-466
1987	0	0	0	0	0	0	-2367	-1800	-1405	-997	-849	-526	-451	0	-486
1988	0	0	0	0	0	0	-2077	-1752	-1685	-1443	-1024	-639	-506	0	-553
1989	0	0	0	0	0	0	-2540	-723	-1027	-1155	-975	-671	-680	0	-456
1990	0	0	0	0	0	0	-2853	-1099	-1285	-529	-1216	-1057	-1198	0	-514
1991	0	0	0	0	0	0	-2717	-1598	-1133	-734	-665	-1037	-1338	0	-492
1992	0	0	0	0	0	0	-2010	-1625	-1659	-974	-879	-474	-416	0	-481
1993	0	0	0	0	0	0	-2370	-1285	-654	-1105	-1347	-1167	-1190	0	-511
1994	0	0	0	0	0	0	-1763	-1855	-1516	-1280	-1056	-578	-449	0	-515
1995	0	0	0	0	0	8	-2590	-1334	-1254	-436	-1455	-1195	-1085	0	-523
1996	0	0	0	0	0	0	-1350	247	265	208	-761	-1273	-1453	0	-186
1997	0	0	0	0	0	0	-1629	44	0	0	-655	-1334	-1647	0	-248
1998	0	0	0	0	0	0	-2401	-1286	361	-18	-1164	-1189	-1238	0	-324
1999	0	0	0	0	0	8	-2318	-910	-355	87	-729	-1167	-1584	0	-334
2000	0	0	0	0	0	0	-2108	-411	-1110	-1074	-1147	-1033	-595	0	-451
2001	0	0	0	0	0	0	-1602	-1581	-1797	-593	-875	-551	-456	0	-449
2002	0	0	0	0	0	0	-2625	-827	-1334	-379	-905	-1054	-949	0	-448
2003	0	0	0	0	0	0	-2575	-1250	-1311	-722	-1086	-538	-494	0	-464
2004	0	0	0	0	0	0	-2483	-1290	-1289	-1095	-1027	-635	-684	0	-497
2005	0	0	0	0	0	0	-2081	-1758	-1468	-1209	-1117	-692	-600	0	-531
2006	0	0	0	0	0	0	-1044	-22	0	-202	-1384	-977	-529	0	-241
2007	0	0	0	0	0	0	-2146	-1123	-1066	-1058	-1100	-697	-535	0	-458
2008	0	0	0	0	0	0	-2401	-1322	49	9	-1214	-1086	-1263	0	-350
average	**0**	**0**	**0**	**0**	**0**	**1**	**-2060**	115-[illegible]gascap s[illegible]	[illegible]	**-595**	**-1026**	**-978**	**-995**	**0**	**-406**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
average								115-120gascap spill					0	

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	0.0	-16.8	-18.1	-40.0	-32.6	-20.6	-8.4	-8.3	0.0	-144.7	-96.5	-48.2
1930	0.0	0.0	0.0	0.0	0.0	0.0	-18.3	-15.0	-33.3	-26.0	-26.6	-8.7	-8.5	0.0	-136.4	-83.9	-52.5
1931	0.0	0.0	0.0	0.0	0.0	0.0	-26.9	-14.8	-34.5	-27.9	-19.5	-7.8	-4.9	0.0	-136.3	-94.7	-41.6
1932	0.0	0.0	0.0	0.0	0.0	0.0	-15.9	-4.9	-1.8	-5.3	-29.3	-12.0	-11.8	0.0	-81.1	-26.2	-54.9
1933	0.0	0.0	0.0	0.0	0.0	0.0	-25.6	-13.5	-17.6	1.0	-9.8	-11.7	-15.2	0.0	-92.5	-56.1	-36.4
1934	0.0	0.0	0.0	0.0	0.0	0.0	-12.9	-4.3	-13.0	-15.9	-22.8	-6.9	-6.7	0.0	-82.5	-40.7	-41.8
1935	0.0	0.0	0.0	0.0	0.0	0.0	-22.8	-13.0	-19.0	-23.1	-24.4	-12.0	-11.4	0.0	-125.7	-70.2	-55.5
1936	0.0	0.0	0.0	0.0	0.0	0.0	-21.8	-7.2	4.4	-11.6	-28.1	-10.1	-8.2	0.0	-82.5	-32.3	-50.2
1937	0.0	0.0	0.0	0.0	0.0	0.0	-17.8	-15.2	-32.4	-30.1	-23.6	-8.5	-6.9	0.0	-134.4	-85.5	-49.0
1938	0.0	0.0	0.0	0.0	0.0	0.0	-18.0	-3.9	0.2	-13.0	-28.7	-11.3	-9.8	0.0	-84.5	-30.4	-54.1
1939	0.0	0.0	0.0	0.0	0.0	0.0	-23.5	-11.5	-13.8	-26.1	-24.2	-7.9	-7.3	0.0	-114.4	-66.3	-48.2
1940	0.0	0.0	0.0	0.0	0.0	0.0	-24.5	-12.0	-22.7	-28.8	-22.6	-8.3	-6.6	0.0	-125.5	-78.4	-47.2
1941	0.0	0.0	0.0	0.0	0.0	0.0	-21.8	-14.9	-30.9	-32.3	-28.3	-10.6	-10.1	0.0	-148.9	-89.1	-59.8
1942	0.0	0.0	0.0	0.0	0.0	0.0	-22.5	-10.8	-23.0	-19.7	-25.3	-12.3	-11.6	0.0	-125.3	-69.4	-55.8
1943	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.5	0.7	-28.5	-15.0	-15.8	0.0	-56.9	2.2	-59.1
1944	0.0	0.0	0.0	0.0	0.0	0.0	-18.8	-18.1	-40.4	-30.8	-28.0	-9.3	-8.9	0.0	-154.3	-97.9	-56.4
1945	0.0	0.0	0.0	0.0	0.0	0.0	-15.7	-5.8	-17.4	-13.6	-26.4	-11.5	-10.3	0.0	-100.8	-48.0	-52.8
1946	0.0	0.0	0.0	0.0	0.0	0.0	-14.5	-2.3	-1.8	-9.7	-24.5	-13.9	-14.0	0.0	-80.8	-25.2	-55.7
1947	0.0	0.0	0.0	0.0	0.0	0.0	-21.6	-10.4	-5.4	-8.9	-25.0	-13.2	-11.8	0.0	-96.1	-43.3	-52.9
1948	0.0	0.0	0.0	0.0	0.0	0.0	-21.4	-7.8	1.7	0.0	-18.7	-13.1	-16.6	0.0	-75.8	-27.4	-48.4
1949	0.0	0.0	0.0	0.0	0.0	0.0	-18.8	-6.4	3.6	-10.1	-29.1	-9.2	-8.8	0.0	-78.8	-28.4	-50.4
1950	0.0	0.0	0.0	0.0	0.0	0.3	-16.1	-6.4	-4.7	0.0	-21.7	-13.1	-17.4	0.0	-79.2	-27.3	-52.3
1951	0.0	0.0	0.0	0.0	0.0	0.0	-14.2	-3.1	-2.0	-14.0	-19.2	-13.2	-16.6	0.0	-82.3	-28.6	-53.7
1952	0.0	0.0	0.0	0.0	0.0	0.0	-9.3	-0.2	0.0	-9.2	-27.2	-13.8	-12.4	0.0	-72.2	-15.6	-56.6
1953	0.0	0.0	0.0	0.0	0.0	0.0	-23.7	-13.6	-8.9	1.6	-23.1	-14.1	-15.0	0.0	-96.8	-45.1	-51.7
1954	0.0	0.0	0.0	0.0	0.0	0.0	-23.2	-10.0	-3.6	-2.0	-6.7	-10.8	-16.6	0.0	-73.0	-38.2	-34.7
1955	0.0	0.0	0.0	0.0	0.0	0.0	-22.9	-13.6	-22.6	-1.1	-8.0	-12.5	-15.3	0.0	-96.1	-59.9	-36.3
1956	0.0	0.0	0.0	0.0	0.0	0.3	-12.2	0.1	0.0	-0.4	-16.0	-12.6	-16.2	0.0	-56.9	-12.3	-44.9
1957	0.0	0.0	0.0	0.0	0.0	0.0	-17.0	-9.4	3.5	-0.7	-27.3	-12.8	-11.4	0.0	-75.0	-23.4	-51.7
1958	0.0	0.0	0.0	0.0	0.0	0.0	-21.3	-8.1	2.6	-2.1	-28.1	-11.2	-11.6	0.0	-79.8	-28.2	-51.5
1959	0.0	0.0	0.0	0.0	0.0	0.0	-19.6	-8.8	-7.5	-3.1	-22.7	-11.8	-15.5	0.0	-88.9	-38.0	-50.9
1960	0.0	0.0	0.0	0.0	0.0	0.0	-7.6	-4.7	-17.2	-13.7	-25.8	-13.2	-11.6	0.0	-93.7	-38.6	-55.1
1961	0.0	0.0	0.0	0.0	0.0	0.0	-23.5	-12.3	-11.6	-4.3	-25.1	-10.9	-9.9	0.0	-97.6	-50.3	-47.4
1962	0.0	0.0	0.0	0.0	0.0	0.0	-12.5	-1.1	-10.2	-8.3	-30.4	-13.8	-12.6	0.0	-88.8	-29.3	-59.5
1963	0.0	0.0	0.0	0.0	0.0	0.0	-23.3	-13.4	-19.8	-18.0	-28.1	-12.6	-12.0	0.0	-127.1	-68.4	-58.7
1964	0.0	0.0	0.0	0.0	0.0	0.0	-23.8	-12.9	-17.8	-0.5	-13.6	-13.9	-17.5	0.0	-100.0	-54.8	-45.2
1965	0.0	0.0	0.0	0.0	0.0	0.1	-21.9	-2.4	2.8	-3.7	-25.5	-14.4	-19.0	0.0	-84.0	-24.0	-60.2
1966	0.0	0.0	0.0	0.0	0.0	0.0	-17.7	-9.6	-24.1	-21.7	-24.4	-12.2	-9.6	0.0	-119.3	-65.8	-53.5
1967	0.0	0.0	0.0	0.0	0.0	0.0	-25.3	-12.4	-10.3	0.0	-19.8	-13.7	-15.6	0.0	-97.1	-48.0	-49.1
1968	0.0	0.0	0.0	0.0	0.0	0.0	-23.1	-12.4	-27.5	-9.0	-22.0	-12.5	-16.6	0.0	-123.1	-69.0	-54.1
1969	0.0	0.0	0.0	0.0	0.0	0.1	-8.5	0.8	0.0	-6.1	-21.1	-11.2	-12.1	0.0	-58.1	-11.7	-46.5
1970	0.0	0.0	0.0	0.0	0.0	0.0	-23.0	-11.8	-15.3	1.5	-29.6	-9.9	-10.1	0.0	-98.2	-49.1	-49.1
1971	0.0	0.0	0.0	0.0	0.0	0.2	-13.8	-4.5	0.0	-0.3	-14.7	-12.4	-16.1	0.0	-61.5	-18.4	-43.3
1972	0.0	0.0	0.0	0.0	0.0	0.0	-8.7	-4.7	0.9	0.0	-9.8	-11.1	-15.8	0.0	-49.1	-12.4	-36.7
1973	0.0	0.0	0.0	0.0	0.0	0.0	-9.2	-12.1	-25.8	-27.6	-24.1	-8.2	-6.9	0.0	-113.9	-65.5	-48.4
1974	0.0	0.0	0.0	0.0	0.0	0.0	-2.2	1.3	0.0	0.0	-7.1	-11.6	-15.3	0.0	-34.9	-0.9	-34.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	-22.9	-12.4	-1.3	0.0	-12.9	-15.3	-19.9	0.0	-84.7	-36.7	-48.0
1976	0.0	0.0	0.0	0.0	0.0	0.1	-14.4	-4.6	3.3	-10.5	-15.1	-10.5	-16.0	0.0	-67.6	-22.6	-45.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	-13.2	-16.8	-36.8	-15.6	-14.6	-6.0	-4.3	0.0	-107.2	-77.2	-30.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	-15.0	-8.5	-8.5	-19.4	-25.2	-12.8	-12.5	0.0	-102.0	-45.0	-57.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	-23.7	-14.0	-12.0	-28.4	-21.1	-6.8	-8.0	0.0	-114.1	-68.6	-45.5
1980	0.0	0.0	0.0	0.0	0.0	0.0	-21.9	-9.5	-1.5	-12.3	-31.0	-10.7	-9.3	0.0	-96.1	-41.0	-55.1
1981	0.0	0.0	0.0	0.0	0.0	0.0	-21.3	-18.7	-25.8	-4.7	-20.7	-12.4	-16.3	0.0	-119.9	-69.0	-50.9
1982	0.0	0.0	0.0	0.0	0.0	0.0	-17.8	-7.4	3.6	-1.1	-19.9	-13.3	-16.9	0.0	-72.8	-22.3	-50.5
1983	0.0	0.0	0.0	0.0	0.0	0.3	-18.5	-9.2	2.0	-0.5	-18.6	-13.2	-17.3	0.0	-75.0	-26.0	-49.3
1984	0.0	0.0	0.0	0.0	0.0	0.0	-13.2	-3.9	-6.3	3.9	-20.4	-14.2	-17.5	0.0	-71.6	-20.9	-50.7
1985	0.0	0.0	0.0	0.0	0.0	0.0	-22.6	-8.2	-9.0	-22.3	-15.8	-6.8	-6.8	0.0	-91.5	-54.7	-36.8
1986	0.0	0.0	0.0	0.0	0.0	0.0	-16.4	-6.3	-19.9	-11.4	-33.4	-12.0	-10.1	0.0	-109.7	-50.2	-59.4
1987	0.0	0.0	0.0	0.0	0.0	0.0	-24.2	-18.4	-26.0	-21.1	-21.5	-6.9	-6.3	0.0	-124.4	-82.7	-41.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	-21.2	-17.9	-32.9	-31.2	-23.0	-7.8	-6.6	0.0	-140.7	-92.8	-47.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	-21.0	-6.0	-17.7	-23.0	-24.9	-8.7	-9.4	0.0	-110.6	-60.0	-50.6
1990	0.0	0.0	0.0	0.0	0.0	0.0	-25.8	-9.9	-22.3	-9.3	-26.5	-12.0	-14.5	0.0	-120.3	-64.2	-56.1
1991	0.0	0.0	0.0	0.0	0.0	0.0	-25.0	-14.7	-19.3	-13.2	-13.1	-11.2	-15.4	0.0	-112.0	-67.8	-44.2
1992	0.0	0.0	0.0	0.0	0.0	0.0	-21.4	-17.3	-32.9	-22.6	-22.3	-6.1	-5.7	0.0	-128.3	-86.7	-41.6
1993	0.0	0.0	0.0	0.0	0.0	0.0	-24.1	-13.1	-10.8	-20.8	-32.8	-15.2	-16.5	0.0	-133.2	-61.8	-71.4
1994	0.0	0.0	0.0	0.0	0.0	0.0	-19.3	-20.3	-29.1	-27.5	-25.2	-7.1	-5.9	0.0	-134.4	-87.0	-47.4
1995	0.0	0.0	0.0	0.0	0.0	0.2	-25.9	-13.4	-21.9	-6.6	-31.1	-13.8	-13.3	0.0	-125.9	-65.6	-60.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	-8.1	1.5	2.7	2.8	-13.8	-13.2	-16.1	0.0	-44.2	-2.1	-42.1
1997	0.0	0.0	0.0	0.0	0.0	0.0	-11.5	0.3	0.0	0.0	-12.1	-14.4	-19.0	0.0	-56.6	-11.2	-45.5
1998	0.0	0.0	0.0	0.0	0.0	0.0	-22.2	-11.9	4.4	-0.2	-23.3	-12.6	-14.0	0.0	-79.8	-29.8	-50.1
1999	0.0	0.0	0.0	0.0	0.0	0.1	-18.9	-7.4	-4.8	1.1	-12.8	-11.0	-16.0	0.0	-69.6	-30.4	-39.4
2000	0.0	0.0	0.0	0.0	0.0	0.0	-15.0	-2.9	-16.9	-18.6	-24.3	-12.1	-7.5	0.0	-97.4	-47.3	-50.1
2001	0.0	0.0	0.0	0.0	0.0	0.0	-18.3	-18.0	-39.2	-16.7	-23.3	-7.4	-6.5	0.0	-129.4	-86.6	-42.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	-23.3	-7.4	-25.4	-6.6	-18.1	-12.6	-12.1	0.0	-105.5	-60.5	-45.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	-26.1	-12.7	-24.4	-12.4	-27.5	-7.0	-6.8	0.0	-116.9	-71.5	-45.4
2004	0.0	0.0	0.0	0.0	0.0	0.0	-25.1	-13.0	-24.2	-21.9	-25.5	-8.3	-9.5	0.0	-127.5	-76.9	-50.6
2005	0.0	0.0	0.0	0.0	0.0	0.0	-23.2	-19.6	-26.1	-23.4	-27.7	-8.3	-7.7	0.0	-135.9	-84.5	-51.4
2006	0.0	0.0	0.0	0.0	0.0	0.0	-6.2	-0.1	0.0	-2.7	-29.1	-11.2	-6.5	0.0	-55.8	-8.1	-47.7
2007	0.0	0.0	0.0	0.0	0.0	0.0	-19.6	-10.3	-18.3	-21.5	-24.6	-8.5	-7.0	0.0	-109.7	-62.5	-47.2
2008	0.0	0.0	0.0	0.0	0.0	0.0	-24.8	-13.6	0.7	0.1	-25.1	-12.3	-15.3	0.0	-90.3	-37.6	-52.7
average	**0**	**0**	**0**	**0**	**0**	**0**	**-19**	[illegible]	[illegible]	**-12**	**-22**	**-11**	**-12**	**0**	**-98**	**-49**	[illegible]

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	3892	5480	4997	5415	5067	5825	5337	5342	5784
1930	5324	6931	6940	5909	6512	6016	4071	5577	5826	4261	6666	6146	5322	5149	5840
1931	5384	7209	7179	5493	5210	5541	4096	4504	6156	5881	6472	6229	5294	4992	5804
1932	5014	6392	6938	4717	4707	7632	9994	7813	9138	8816	6179	6724	5897	5732	6708
1933	5420	6187	7670	9878	10074	9166	6840	5743	7166	10445	8087	7223	7192	5689	7761
1934	6178	9912	13203	14085	13427	11257	10828	8008	8115	7783	7026	5753	5382	5068	9232
1935	5516	5871	8108	9388	9485	9263	5678	5584	6784	6061	7410	7179	5760	5017	7078
1936	5240	6782	6991	6040	5801	6331	4702	7261	8969	7945	6255	6148	5157	4969	6415
1937	5210	7167	7105	6114	5428	5789	4127	4338	5815	4992	5982	6024	5194	4920	5702
1938	5418	6270	8548	8641	8425	9657	7516	7825	8038	7454	6737	5934	5244	5586	7333
1939	5482	6668	6812	7363	7376	7241	5728	6329	7368	5826	6251	5742	5163	5164	6416
1940	5680	7272	8589	7428	6282	10345	6347	5493	6542	5933	6225	5736	5007	4966	6722
1941	5563	6710	8274	6412	6482	6347	4288	5531	6222	5186	6480	5866	5032	5103	6097
1942	5439	7501	8674	8727	7818	7851	4470	5446	6201	6653	7557	6731	5836	6244	6991
1943	5522	6002	7834	9706	9983	9734	12217	10754	8139	9908	5569	6144	5633	5182	7893
1944	5007	6796	6854	6884	6599	5870	3684	5492	5087	3857	5603	5647	4952	4644	5591
1945	5431	6868	6982	5454	5910	5800	3701	3302	6759	7403	5160	6100	5357	5072	5839
1946	5140	6483	8422	8727	8773	8793	8573	8397	8598	7940	7262	7039	6245	5702	7574
1947	4993	6858	11241	11573	11266	10895	7016	5755	8009	8306	7510	6791	5587	5571	8222
1948	7754	8621	9630	11795	10123	8635	7096	7560	10818	12746	7732	7333	7297	6635	9092
1949	5407	6747	7923	8933	7794	10779	8128	7260	9276	7913	5335	5444	4808	4774	7309
1950	5236	6647	8074	11301	11163	11064	9644	6616	7899	10433	6527	7240	6835	5758	8254
1951	6061	8997	11389	13410	13333	12165	9532	7548	8261	7098	7670	7343	6979	5727	9133
1952	7181	7768	9621	11120	9794	9831	10334	9088	10894	8188	6923	6464	5420	4867	8487
1953	5043	6551	7048	8802	8165	8172	5974	5716	7659	10982	7295	6429	5869	5583	7267
1954	5295	7053	8874	10683	10624	9927	7023	5893	7977	9148	8463	7438	7386	8584	8362
1955	5439	7997	8525	7697	7177	6435	5208	5898	6670	9426	8558	7310	6703	5335	7151
1956	5556	8494	11270	13081	12791	11232	9607	10619	10990	10879	7721	7220	6669	5576	9544
1957	5528	6688	9001	9321	7476	9117	9852	5972	11342	11026	7187	6524	5408	5401	8003
1958	5283	6946	7458	9431	8819	9096	7314	6379	9811	8854	6684	5938	5600	5387	7527
1959	5401	7425	10676	12647	11972	10390	8311	6528	7367	10007	6872	7432	7389	8643	8832
1960	8817	9974	10648	10862	8650	8921	11647	7636	7133	7615	7296	6657	5426	5273	8406
1961	5407	6737	8214	9996	9985	9829	7867	6002	7932	10653	7371	6714	5903	5243	7871
1962	5183	6854	7493	9275	9040	6809	10259	8300	7764	8280	5398	6205	5429	5122	7175
1963	5714	7888	10227	10726	9100	8565	5341	5877	6475	6647	7181	6607	5718	5792	7504
1964	5131	6428	8088	8105	7485	6803	8086	5387	7454	12024	8128	7310	7083	6467	7499
1965	6174	7598	11453	14282	13488	11783	6340	8722	9172	8897	6982	7178	6603	5323	9114
1966	5606	7321	8590	9056	8277	6840	9770	6566	6609	7109	7524	7139	5689	5456	7240
1967	5225	6573	8419	11670	11375	10649	6136	4825	7031	10898	7468	7141	6384	5695	8086
1968	5403	7312	8582	10750	9605	9730	5483	5892	6034	8191	7559	7297	6494	7177	7740
1969	6360	8627	9663	12719	12869	10110	9905	8051	9687	7954	7538	6995	6304	5524	8869
1970	5278	7066	7371	9461	8957	8431	6666	5347	6845	9752	6150	5713	5164	5302	7157
1971	5161	6680	7683	12850	13453	12038	9228	7458	11190	11965	7840	7376	7290	6172	9201
1972	5575	6873	8805	12437	12961	12746	10916	6541	10271	12528	8153	7379	7344	6847	9429
1973	5555	7016	8335	9373	7810	6379	3451	5624	6002	5428	6074	5966	5001	5028	6416
1974	5377	6042	9805	14774	14456	12252	10572	8764	9787	11997	8157	7317	7306	6548	9654
1975	4991	6857	7720	8816	9746	9141	5601	5601	7609	11277	8234	7284	6507	6199	7743
1976	6412	8976	12577	12339	12264	11373	10456	7811	9848	7953	7838	7357	7302	9149	9593
1977	5650	6981	7010	6878	6916	6248	3689	5567	5594	4144	6097	5946	5092	4227	5823
1978	4832	5872	9304	9104	9174	8785	9855	6069	7568	6086	7150	6155	5386	6586	7341
1979	5785	7008	7541	8595	6335	8519	5394	6116	7856	5648	5528	5568	4976	5240	6599
1980	5320	6905	6475	7790	7233	6231	6797	7034	9602	8357	5825	6056	5111	5595	6814
1981	5462	6871	10615	11303	10292	9018	4232	6021	6984	10035	7664	7420	7311	6162	8068
1982	5278	7255	9130	10738	13112	12833	8911	6434	9122	10913	7019	7317	7296	7400	8955
1983	6257	7358	9478	11328	10873	12035	8486	5859	8262	8301	7674	7290	7200	6022	8495
1984	5398	9267	9426	10559	10539	9989	10758	7876	8312	11219	7396	7206	6212	6017	8664
1985	5379	7213	8412	8591	8105	7875	7475	6390	8117	6312	4960	5109	4663	5011	6810
1986	5906	8400	8458	9396	10334	13093	9395	7162	6839	8035	6710	6370	5330	5333	8038
1987	5067	6621	8571	8184	6217	8310	4841	5586	7058	7322	6044	5544	4850	4845	6562
1988	5268	6897	6444	5975	5454	6104	4022	5088	5880	5399	6916	6126	5366	4820	5793
1989	5146	6307	8210	6579	6367	7510	7471	7612	7418	6078	5468	5712	5084	5080	6427
1990	5229	7251	9006	9959	9839	9348	6390	8087	7422	8271	6813	7031	6164	5278	7676
1991	4853	9108	10030	11163	10769	9887	8069	6479	7565	7990	7874	7234	7114	5443	8249
1992	5039	6799	7232	7742	6326	8187	4267	5280	5905	5664	5877	5634	4968	4613	6127
1993	5414	6809	7458	6030	5299	6968	4239	5872	7191	6377	5992	5890	5164	5103	6111
1994	5156	7360	7375	6097	6439	5928	3842	5194	6899	7063	6326	5968	5170	5139	6154
1995	5191	6284	7526	6832	10055	10245	5657	5279	6055	8044	6232	5859	5219	5684	6909
1996	6488	10185	14141	14420	13243	13287	9610	9159	8833	10024	7981	7347	7224	5444	10056
1997	5191	7086	9402	14166	14378	13415	9980	9718	11848	12570	7999	7253	7216	7148	9997
1998	8063	8511	9183	8622	9172	7934	5264	6126	9947	9506	6815	7124	5986	5401	7946
1999	5152	6237	8880	12300	12279	12153	7859	6522	7836	10701	7890	7282	7243	6595	8688
2000	5450	9391	10217	9904	9501	9007	9334	8167	6659	6778	7288	6842	5012	5250	7835
2001	5227	6858	6957	6891	6601	6259	3650	5568	5403	3703	5954	5682	4949	4059	5654
2002	4716	6244	7770	6583	6876	6704	6476	7431	6318	8764	7791	6785	5699	5291	6683
2003	4946	7244	7101	6150	6405	9422	6688	6054	6589	8119	5522	5295	4747	4725	6466
2004	5513	7060	8829	6781	5971	8259	5752	5708	6492	6912	5467	5545	5060	6545	6575
2005	5504	6966	8883	8939	8404	7096	4364	5924	6972	7495	6201	6245	5204	5234	6874
2006	5331	6895	8209	10292	9815	9509	10998	8356	10711	8532	6601	6510	4965	4952	8011
2007	4768	7200	8322	10004	8010	10986	8403	6691	7230	7130	7422	6020	5052	4600	7399
2008	5529	6826	7707	7619	7486	7001	5741	4694	8978	10460	7071	6381	6128	5291	7120

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	5379	7300	8020	8308	5907	6490	5953	5342	6540
1930	5324	6931	6940	5909	6512	6016	5893	7816	8326	5667	7898	6821	5940	5149	6495
1931	5384	7209	7179	5493	5210	5541	6388	5837	9085	7086	7218	6823	5644	4992	6404
1932	5014	6392	6938	4717	4707	7632	11865	11423	12537	12346	7916	7926	6844	5732	7748
1933	5420	6187	7670	9878	10074	9166	9002	8466	10825	13112	10808	8795	8940	5689	8864
1934	6178	9912	13203	14085	13427	11257	12457	11641	11513	9879	8217	6316	5896	5068	10056
1935	5516	5871	8108	9388	9485	9263	7837	7782	10204	9005	9482	8687	6685	5017	8068
1936	5240	6782	6991	6040	5801	6331	7042	10905	11803	11126	7619	6962	5770	4969	7337
1937	5210	7167	7105	6114	5428	5789	5707	5769	8984	7025	7024	6734	5733	4920	6403
1938	5418	6270	8548	8641	8425	9656	9862	11540	11205	11242	8837	6889	6022	5586	8414
1939	5482	6668	6812	7363	7376	7241	8162	9292	10877	7205	7314	6374	5713	5164	7190
1940	5680	7272	8589	7428	6282	10343	8835	8367	10128	7818	7200	6409	5511	4966	7532
1941	5563	6710	8274	6412	6482	6347	6210	7060	9367	7561	7979	6711	5787	5103	6897
1942	5439	7501	8674	8727	7818	7851	6940	8870	9772	10230	10021	7945	6775	6244	8131
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8682	7752	6933	5182	8790
1944	5007	6796	6854	6884	6599	5870	5437	7354	7603	5565	6714	6343	5578	4644	6242
1945	5431	6868	6982	5454	5910	5800	5103	3876	10497	11131	6405	7062	6160	5072	6725
1946	5140	6483	8422	8727	8773	8793	10579	11961	11591	11396	9479	8713	7512	5702	8654
1947	4993	6858	11241	11573	11266	10894	9335	8933	11635	11965	9818	8135	6525	5571	9349
1948	7754	8621	9630	11795	10123	8635	9454	11339	12577	12746	10642	9210	9278	6635	9902
1949	5407	6747	7923	8933	7794	10778	10399	11078	11866	11532	6587	6183	5470	4774	8243
1950	5236	6647	8074	11301	11163	11048	11490	10271	11436	11857	9784	9409	8761	5758	9346
1951	6061	8997	11389	13410	13333	12165	11325	11173	11427	10841	10497	9108	8647	5727	10318
1952	7181	7768	9621	11120	9794	9831	11357	12018	12227	11864	9224	7788	6421	4867	9357
1953	5043	6551	7048	8802	8165	8172	8118	8328	11228	12896	10268	7759	7065	5583	8282
1954	5295	7053	8874	10683	10624	9926	9534	9395	11431	11913	11318	9610	9541	8584	9556
1955	5439	7997	8525	7697	7177	6435	7395	8069	10327	12650	11495	9182	8213	5335	8298
1956	5556	8494	11270	13081	12791	11215	11163	12041	11795	12577	10547	9130	8344	5576	10263
1957	5528	6688	9001	9321	7476	9116	11797	9224	12996	13686	9313	7781	6335	5401	8848
1958	5283	6946	7458	9431	8819	9096	9655	10121	11914	12234	8376	6893	6527	5387	8457
1959	5401	7425	10676	12647	11972	10390	10641	9277	10967	12503	9247	9164	9203	8643	9904
1960	8817	9974	10648	10862	8650	8921	12795	10970	10742	11377	9272	7910	6315	5273	9461
1961	5407	6737	8214	9996	9985	9829	10181	8354	11613	12775	9029	7698	6686	5243	8766
1962	5183	6854	7493	9275	9040	6809	11912	11656	11416	11981	6770	7361	6361	5122	8200
1963	5714	7888	10227	10726	9100	8565	7592	8097	10318	10422	9402	7757	6680	5792	8603
1964	5131	6428	8088	8105	7485	6803	10478	8089	11340	12829	11249	9181	8920	6467	8524
1965	6174	7598	11453	14282	13488	11776	8882	12185	11862	12006	9852	9172	8582	5323	10257
1966	5606	7321	8590	9056	8277	6840	11764	9070	9703	9746	9385	8413	6434	5456	8147
1967	5225	6573	8419	11670	11375	10649	8222	6170	10657	12210	10338	8732	7692	5695	9009
1968	5403	7312	8582	10750	9605	9730	7531	7328	8844	11890	9723	8879	7955	7177	8736
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11514	9780	8269	7411	5524	9787
1970	5278	7066	7371	9461	8957	8430	8793	6875	10665	12515	8281	6568	5974	5302	8111
1971	5161	6680	7683	12850	13453	12023	11159	11039	12099	12486	11136	9456	9175	6172	9995
1972	5575	6873	8805	12437	12961	12746	12196	9952	12189	12528	11138	9468	9291	6847	10207
1973	5555	7016	8335	9373	7810	6379	4305	6859	8958	7374	7131	6650	5541	5028	7054
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11458	9384	9315	6548	10356
1975	4991	6857	7720	8816	9746	9140	8006	8353	10875	12735	11928	9332	8346	6199	8830
1976	6412	8976	12577	12339	12264	11369	12031	11582	12132	11773	10860	9862	9909	9149	10791
1977	5650	6981	7010	6878	6916	6248	4865	7097	7508	4741	6678	6418	5408	4227	6229
1978	4832	5872	9304	9104	9174	8785	11615	9346	11284	9807	9895	7262	6398	6586	8493
1979	5785	7008	7541	8595	6335	8519	7549	8542	11630	7999	6419	6122	5588	5240	7426
1980	5320	6905	6475	7790	7233	6231	8846	10396	12779	12211	7473	6914	5812	5595	7827
1981	5462	6871	10615	11303	10292	9018	6201	8704	10994	13349	10105	8998	8989	6162	9218
1982	5278	7255	9130	10738	13112	12833	11033	10156	11853	12588	10625	9349	9362	7400	10045
1983	6257	7358	9478	11328	10873	12020	10586	9084	11388	11608	10706	9288	9331	6022	9683
1984	5398	9267	9426	10559	10539	9989	12292	11580	11752	12986	10666	9306	7805	6017	9748
1985	5379	7213	8412	8591	8105	7875	9867	10169	11785	9204	5553	5617	5143	5011	7705
1986	5906	8400	8458	9396	10334	13093	11296	10895	10675	11835	8518	7364	6100	5333	9136
1987	5067	6621	8571	8184	6217	8310	7000	7995	10400	9153	6893	6070	5301	4845	7298
1988	5268	6897	6444	5975	5454	6104	6098	8060	8962	7373	8217	6765	5872	4820	6581
1989	5146	6307	8210	6579	6367	7510	9905	11435	11203	9261	6455	6383	5764	5080	7408
1990	5229	7251	9006	9959	9839	9348	8949	12239	11023	11691	8649	8366	7411	5278	8804
1991	4853	9108	10030	11163	10769	9887	10358	9204	11514	11616	10592	8981	8770	5443	9464
1992	5039	6799	7232	7742	6326	8187	6214	7120	8688	6711	6764	6108	5384	4613	6716
1993	5414	6809	7458	6030	5299	6968	6773	8376	10822	10031	7809	7122	6354	5103	7183
1994	5156	7360	7375	6097	6439	5928	5667	7868	10226	8947	7641	6546	5619	5139	6931
1995	5191	6284	7526	6832	10055	10237	8153	7710	9900	11702	8949	7161	6304	5684	8070
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	11037	9197	9004	5444	11060
1997	5191	7086	9402	14166	14378	13415	11443	12273	12090	12934	11231	9414	9405	7148	10672
1998	8063	8511	9183	8622	9172	7934	7567	8731	12189	12784	9358	8945	7265	5401	8954
1999	5152	6237	8880	12300	12279	12145	10125	10198	11397	12895	10980	9473	9391	6595	9861
2000	5450	9391	10217	9904	9501	9007	11331	11792	10400	9846	9195	8121	5607	5250	8874
2001	5227	6858	6957	6891	6601	6259	5268	7317	8355	4326	6829	6233	5405	4059	6211
2002	4716	6244	7770	6583	6876	6704	9028	11067	9933	12177	10336	8039	6648	5291	7834
2003	4946	7244	7101	6150	6405	9422	9183	8950	10213	11891	6617	5833	5241	4725	7442
2004	5513	7060	8829	6781	5971	8259	8091	8168	10182	10151	6527	6180	5744	6545	7495
2005	5504	6966	8883	8939	8404	7096	6352	8112	11023	10119	7349	6937	5804	5234	7757
2006	5331	6895	8209	10292	9815	9509	11911	11652	12364	11778	8320	7556	5494	4952	8803
2007	4768	7200	8322	10004	8010	10986	10106	9298	10906	9413	9085	6717	5587	4600	8269
2008	5529	6826	7707	7619	7486	7001	7977	6498	12166	13324	9656	7510	7391	5291	8110

spill to 125 gas cap - base case

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	0	-1487	-1820	-3023	-2893	-840	-665	-616	0	-756
1930	0	0	0	0	0	0	-1822	-2239	-2500	-1406	-1232	-675	-618	0	-655
1931	0	0	0	0	0	0	-2292	-1333	-2929	-1205	-746	-594	-350	0	-600
1932	0	0	0	0	0	0	-1871	-3610	-3399	-3530	-1737	-1202	-947	0	-1040
1933	0	0	0	0	0	0	-2162	-2723	-3659	-2667	-2721	-1572	-1748	0	-1103
1934	0	0	0	0	0	0	-1629	-3633	-3398	-2096	-1191	-563	-514	0	-824
1935	0	0	0	0	0	0	-2159	-2198	-3420	-2944	-2072	-1508	-925	0	-990
1936	0	0	0	0	0	0	-2340	-3644	-2834	-3181	-1364	-814	-613	0	-922
1937	0	0	0	0	0	0	-1580	-1431	-3169	-2033	-1042	-710	-539	0	-701
1938	0	0	0	0	0	1	-2346	-3715	-3167	-3788	-2100	-955	-778	0	-1081
1939	0	0	0	0	0	0	-2434	-2963	-3509	-1379	-1063	-632	-550	0	-774
1940	0	0	0	0	0	2	-2488	-2874	-3586	-1885	-975	-673	-504	0	-810
1941	0	0	0	0	0	0	-1922	-1529	-3145	-2375	-1499	-845	-755	0	-800
1942	0	0	0	0	0	0	-2470	-3424	-3571	-3577	-2464	-1214	-939	0	-1140
1943	0	0	0	0	0	1	574	-1579	-3157	-2443	-3113	-1608	-1300	0	-897
1944	0	0	0	0	0	0	-1753	-1862	-2516	-1708	-1111	-696	-626	0	-651
1945	0	0	0	0	0	0	-1402	-574	-3738	-3728	-1245	-962	-803	0	-886
1946	0	0	0	0	0	0	-2006	-3564	-2993	-3456	-2217	-1674	-1267	0	-1080
1947	0	0	0	0	0	1	-2319	-3178	-3626	-3659	-2308	-1344	-938	0	-1127
1948	0	0	0	0	0	0	-2358	-3779	-1759	0	-2910	-1877	-1981	0	-810
1949	0	0	0	0	0	1	-2271	-3818	-2590	-3619	-1252	-739	-662	0	-934
1950	0	0	0	0	0	16	-1846	-3655	-3537	-1424	-3257	-2169	-1926	0	-1092
1951	0	0	0	0	0	0	-1793	-3625	-3166	-3743	-2827	-1765	-1668	0	-1185
1952	0	0	0	0	0	0	-1023	-2930	-1333	-3676	-2301	-1324	-1001	0	-870
1953	0	0	0	0	0	0	-2144	-2612	-3569	-1914	-2973	-1330	-1196	0	-1015
1954	0	0	0	0	0	1	-2511	-3502	-3454	-2765	-2855	-2172	-2155	0	-1194
1955	0	0	0	0	0	0	-2187	-2171	-3657	-3224	-2937	-1872	-1510	0	-1147
1956	0	0	0	0	0	17	-1556	-1422	-805	-1698	-2826	-1910	-1675	0	-719
1957	0	0	0	0	0	1	-1945	-3252	-1654	-2660	-2126	-1257	-927	0	-845
1958	0	0	0	0	0	0	-2341	-3742	-2103	-3380	-1692	-955	-927	0	-930
1959	0	0	0	0	0	0	-2330	-2749	-3600	-2496	-2375	-1732	-1814	0	-1072
1960	0	0	0	0	0	0	-1148	-3334	-3609	-3762	-1976	-1253	-889	0	-1055
1961	0	0	0	0	0	0	-2314	-2352	-3681	-2122	-1658	-984	-783	0	-895
1962	0	0	0	0	0	0	-1653	-3356	-3652	-3701	-1372	-1156	-932	0	-1025
1963	0	0	0	0	0	0	-2251	-2220	-3843	-3775	-2221	-1150	-962	0	-1099
1964	0	0	0	0	0	0	-2392	-2702	-3886	-805	-3121	-1871	-1837	0	-1025
1965	0	0	0	0	0	7	-2542	-3463	-2690	-3109	-2870	-1994	-1979	0	-1143
1966	0	0	0	0	0	0	-1994	-2504	-3094	-2637	-1861	-1274	-745	0	-907
1967	0	0	0	0	0	0	-2086	-1345	-3626	-1312	-2870	-1591	-1308	0	-923
1968	0	0	0	0	0	0	-2048	-1436	-2810	-3699	-2164	-1582	-1461	0	-996
1969	0	0	0	0	0	4	-1164	-3020	-1914	-3560	-2242	-1274	-1107	0	-918
1970	0	0	0	0	0	1	-2127	-1528	-3820	-2763	-2131	-855	-810	0	-954
1971	0	0	0	0	0	15	-1931	-3581	-909	-521	-3296	-2080	-1885	0	-794
1972	0	0	0	0	0	0	-1280	-3411	-1918	0	-2985	-2089	-1947	0	-778
1973	0	0	0	0	0	0	-854	-1235	-2956	-1946	-1057	-684	-540	0	-638
1974	0	0	0	0	0	0	-328	-2239	-1680	0	-3301	-2067	-2009	0	-702
1975	0	0	0	0	0	1	-2405	-2752	-3266	-1458	-3694	-2048	-1839	0	-1087
1976	0	0	0	0	0	4	-1575	-3771	-2284	-3820	-3022	-2505	-2607	0	-1198
1977	0	0	0	0	0	0	-1176	-1530	-1914	-597	-581	-472	-316	0	-406
1978	0	0	0	0	0	0	-1760	-3277	-3716	-3721	-2745	-1107	-1012	0	-1152
1979	0	0	0	0	0	0	-2155	-2426	-3774	-2351	-891	-554	-612	0	-827
1980	0	0	0	0	0	0	-2049	-3362	-3177	-3854	-1648	-858	-701	0	-1013
1981	0	0	0	0	0	0	-1969	-2683	-4010	-3314	-2441	-1578	-1678	0	-1150
1982	0	0	0	0	0	0	-2122	-3722	-2731	-1675	-3606	-2032	-2066	0	-1090
1983	0	0	0	0	0	15	-2100	-3225	-3126	-3307	-3032	-1998	-2131	0	-1188
1984	0	0	0	0	0	0	-1534	-3704	-3440	-1767	-3270	-2100	-1593	0	-1084
1985	0	0	0	0	0	0	-2392	-3779	-3668	-2892	-593	-508	-480	0	-895
1986	0	0	0	0	0	0	-1901	-3733	-3836	-3800	-1808	-994	-770	0	-1098
1987	0	0	0	0	0	0	-2159	-2409	-3342	-1831	-849	-526	-451	0	-736
1988	0	0	0	0	0	0	-2076	-2972	-3082	-1974	-1301	-639	-506	0	-788
1989	0	0	0	0	0	0	-2434	-3823	-3785	-3183	-987	-671	-680	0	-981
1990	0	0	0	0	0	0	-2559	-4152	-3601	-3420	-1836	-1335	-1247	0	-1128
1991	0	0	0	0	0	0	-2289	-2725	-3949	-3626	-2718	-1747	-1656	0	-1215
1992	0	0	0	0	0	0	-1947	-1840	-2783	-1047	-887	-474	-416	0	-589
1993	0	0	0	0	0	0	-2534	-2504	-3631	-3654	-1817	-1232	-1190	0	-1072
1994	0	0	0	0	0	0	-1825	-2674	-3327	-1884	-1315	-578	-449	0	-777
1995	0	0	0	0	0	8	-2496	-2431	-3845	-3658	-2717	-1302	-1085	0	-1161
1996	0	0	0	0	0	0	-1147	-2774	-2541	-2623	-3056	-1850	-1780	0	-1004
1997	0	0	0	0	0	0	-1463	-2555	-242	-364	-3232	-2161	-2189	0	-675
1998	0	0	0	0	0	0	-2303	-2605	-2242	-3278	-2543	-1821	-1279	0	-1008
1999	0	0	0	0	0	8	-2266	-3676	-3561	-2194	-3090	-2191	-2148	0	-1173
2000	0	0	0	0	0	0	-1997	-3625	-3741	-3068	-1907	-1279	-595	0	-1039
2001	0	0	0	0	0	0	-1618	-1749	-2952	-623	-875	-551	-456	0	-557
2002	0	0	0	0	0	0	-2552	-3636	-3615	-3413	-2545	-1254	-949	0	-1151
2003	0	0	0	0	0	0	-2495	-2896	-3624	-3772	-1095	-538	-494	0	-976
2004	0	0	0	0	0	0	-2339	-2460	-3690	-3239	-1060	-635	-684	0	-920
2005	0	0	0	0	0	0	-1988	-2188	-4051	-2624	-1148	-692	-600	0	-883
2006	0	0	0	0	0	0	-913	-3296	-1653	-3246	-1719	-1046	-529	0	-792
2007	0	0	0	0	0	0	-1703	-2607	-3676	-2283	-1663	-697	-535	0	-870
2008	0	0	0	0	0	0	-2236	-1804	-3188	-2864	-2585	-1129	-1263	0	-990
average	**0**	**0**	**0**	**0**	**0**	**1**	**-1935**	**-2978**	**-3071**	**-2559**	**-2060**	**-1263**	**-1112**	**0**	**-940**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
average								125gal cap spill					0	

spill to 125 gas cap - base case

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	0.0	-16.8	-20.5	-63.5	-63.0	-22.2	-8.4	8.3	0.0	-202.7	-142.8	-59.9
1930	0.0	0.0	0.0	0.0	0.0	0.0	-19.5	-24.0	-52.0	-34.5	-30.0	-8.7	-8.5	0.0	-177.4	-118.6	-58.8
1931	0.0	0.0	0.0	0.0	0.0	0.0	-25.8	-15.0	-59.0	-29.3	-19.5	-7.8	-4.9	0.0	-161.3	-119.3	-42.0
1932	0.0	0.0	0.0	0.0	0.0	0.0	-14.9	-28.7	-43.9	-52.2	-38.8	-14.0	-11.8	0.0	-204.2	-122.3	-81.9
1933	0.0	0.0	0.0	0.0	0.0	0.0	-22.0	-27.8	-64.3	-38.8	-50.6	-16.7	-19.8	0.0	-240.0	-140.0	-100.0
1934	0.0	0.0	0.0	0.0	0.0	0.0	-13.2	-29.4	-56.0	-41.8	-28.6	-6.9	-6.7	0.0	-182.7	-126.5	-56.2
1935	0.0	0.0	0.0	0.0	0.0	0.0	-21.2	-21.6	-57.3	-55.8	-44.7	-17.5	-11.4	0.0	-229.5	-137.3	-92.2
1936	0.0	0.0	0.0	0.0	0.0	0.0	-22.8	-35.5	-34.4	-50.7	-31.9	-10.1	-8.2	0.0	-193.5	-126.4	-67.1
1937	0.0	0.0	0.0	0.0	0.0	0.0	-17.3	-15.7	-59.3	-42.4	-24.7	-8.5	-6.9	0.0	-174.7	-120.5	-54.2
1938	0.0	0.0	0.0	0.0	0.0	0.0	-17.2	-27.2	-38.9	-59.6	-44.9	-11.3	-9.8	0.0	-208.9	-123.0	-85.9
1939	0.0	0.0	0.0	0.0	0.0	0.0	-22.6	-27.5	-53.7	-29.5	-25.4	-7.9	-7.3	0.0	-173.9	-123.4	-50.5
1940	0.0	0.0	0.0	0.0	0.0	0.0	-23.7	-27.4	-62.2	-39.5	-23.5	-8.3	-6.6	0.0	-191.2	-139.7	-51.6
1941	0.0	0.0	0.0	0.0	0.0	0.0	-20.6	-16.4	-60.1	-51.3	-34.9	-10.6	-10.1	0.0	-203.8	-131.2	-72.6
1942	0.0	0.0	0.0	0.0	0.0	0.0	-23.6	-32.7	-63.3	-65.1	-50.2	-14.1	-11.6	0.0	-260.7	-163.0	-97.6
1943	0.0	0.0	0.0	0.0	0.0	0.0	3.0	-8.2	-33.7	-28.0	-64.6	-18.4	-15.8	0.0	-165.7	-57.6	-108.2
1944	0.0	0.0	0.0	0.0	0.0	0.0	-19.7	-20.9	-55.7	-42.4	-28.8	-9.3	-8.9	0.0	-185.8	-124.6	-61.2
1945	0.0	0.0	0.0	0.0	0.0	0.0	-15.7	-6.4	-58.7	-60.3	-30.4	-11.6	-10.3	0.0	-193.4	-121.0	-72.4
1946	0.0	0.0	0.0	0.0	0.0	0.0	-13.6	-24.2	-34.4	-48.7	-43.2	-17.6	-14.2	0.0	-195.8	-104.6	-91.2
1947	0.0	0.0	0.0	0.0	0.0	0.0	-20.0	-27.4	-51.4	-56.8	-48.3	-15.8	-11.8	0.0	-231.4	-136.6	-94.8
1948	0.0	0.0	0.0	0.0	0.0	0.0	-19.9	-32.0	-18.9	0.0	-55.8	-19.6	-22.1	0.0	-168.2	-70.8	-97.5
1949	0.0	0.0	0.0	0.0	0.0	0.0	-17.8	-30.0	-30.5	-55.2	-30.4	-9.2	-8.8	0.0	-181.8	-115.1	-66.7
1950	0.0	0.0	0.0	0.0	0.0	0.3	-14.3	-28.3	-49.3	-19.5	-64.2	-22.4	-21.2	0.0	-218.8	-104.9	-114.3
1951	0.0	0.0	0.0	0.0	0.0	0.0	-13.1	-26.6	-42.0	-62.1	-56.2	-19.3	-19.5	0.0	-238.9	-123.1	-115.7
1952	0.0	0.0	0.0	0.0	0.0	0.0	-7.1	-20.3	-13.3	-53.1	-49.1	-15.4	-12.4	0.0	-170.8	-76.1	-94.7
1953	0.0	0.0	0.0	0.0	0.0	0.0	-21.1	-25.7	-51.6	-24.1	-58.8	-15.7	-15.0	0.0	-211.9	-114.4	-97.5
1954	0.0	0.0	0.0	0.0	0.0	0.0	-22.8	-31.8	-49.6	-40.4	-49.8	-21.9	-23.2	0.0	-239.5	-131.1	-108.4
1955	0.0	0.0	0.0	0.0	0.0	0.0	-21.9	-21.8	-63.2	-43.0	-50.0	-19.8	-17.0	0.0	-236.8	-135.6	-101.2
1956	0.0	0.0	0.0	0.0	0.0	0.3	-10.8	-9.8	-9.2	-19.5	-53.6	-19.7	-18.4	0.0	-140.7	-42.8	-98.2
1957	0.0	0.0	0.0	0.0	0.0	0.0	-15.8	-26.5	-19.1	-35.6	-45.4	-14.4	-11.4	0.0	-168.1	-85.1	-83.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	-20.0	-32.0	-22.7	-47.3	-36.9	-11.2	-11.6	0.0	-181.6	-106.3	-75.4
1959	0.0	0.0	0.0	0.0	0.0	0.0	-19.3	-22.7	-52.4	-32.9	-45.2	-17.2	-19.2	0.0	-208.9	-116.3	-92.6
1960	0.0	0.0	0.0	0.0	0.0	0.0	-8.5	-24.7	-57.8	-64.3	-43.6	-15.3	-11.6	0.0	-225.9	-133.9	-92.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	-22.0	-22.3	-57.5	-32.5	-36.8	-11.6	-9.9	0.0	-192.7	-123.5	-69.2
1962	0.0	0.0	0.0	0.0	0.0	0.0	-11.5	-23.4	-51.5	-60.0	-34.9	-14.6	-12.6	0.0	-208.5	-126.4	-82.1
1963	0.0	0.0	0.0	0.0	0.0	0.0	-22.3	-22.0	-62.5	-67.6	-48.0	-13.4	-12.0	0.0	-247.6	-151.8	-95.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	-22.6	-25.6	-65.3	-10.7	-58.7	-20.3	-21.2	0.0	-224.3	-120.6	-103.7
1965	0.0	0.0	0.0	0.0	0.0	0.1	-21.4	-29.1	-36.3	-54.3	-62.2	-21.5	-22.7	0.0	-247.3	-122.9	-124.5
1966	0.0	0.0	0.0	0.0	0.0	0.0	-16.8	-21.1	-56.3	-51.0	-41.7	-15.3	-9.6	0.0	-211.8	-128.2	-83.6
1967	0.0	0.0	0.0	0.0	0.0	0.0	-22.0	-14.2	-52.2	-15.1	-55.8	-18.4	-16.1	0.0	-193.8	-98.5	-95.3
1968	0.0	0.0	0.0	0.0	0.0	0.0	-21.0	-14.7	-51.5	-54.8	-43.8	-17.5	-17.3	0.0	-220.7	-123.8	-96.8
1969	0.0	0.0	0.0	0.0	0.0	0.1	-7.1	-18.4	-13.9	-45.1	-42.6	-13.1	-12.1	0.0	-152.2	-69.4	-82.9
1970	0.0	0.0	0.0	0.0	0.0	0.0	-20.1	-14.4	-53.9	-36.6	-46.7	-9.9	-10.1	0.0	-191.7	-112.8	-78.9
1971	0.0	0.0	0.0	0.0	0.0	0.2	-12.4	-23.0	-7.3	-5.0	-54.2	-20.3	-19.6	0.0	-141.5	-45.9	-95.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	-8.4	-22.3	-19.1	0.0	-52.5	-19.9	-19.8	0.0	-142.0	-49.8	-92.3
1973	0.0	0.0	0.0	0.0	0.0	0.0	-9.2	-13.3	-52.7	-39.5	-24.7	-8.2	-6.9	0.0	-154.5	-101.6	-52.9
1974	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-10.3	-12.1	0.0	-50.7	-18.3	-19.0	0.0	-111.9	-23.9	-88.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	-22.5	-25.8	-28.7	-17.9	-67.2	-23.4	-22.4	0.0	-207.9	-89.0	-119.0
1976	0.0	0.0	0.0	0.0	0.0	0.1	-12.4	-29.8	-28.5	-61.0	-58.5	-25.8	-28.7	0.0	-244.6	-111.4	-133.3
1977	0.0	0.0	0.0	0.0	0.0	0.0	-13.2	-17.2	-42.7	-15.6	-14.6	-6.0	-4.3	0.0	-113.7	-83.6	-30.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	-13.7	-25.5	-52.7	-67.9	-56.8	-12.8	-12.5	0.0	-241.7	-137.1	-104.6
1979	0.0	0.0	0.0	0.0	0.0	0.0	-22.4	-25.2	-56.5	-47.5	-21.2	-6.8	-8.0	0.0	-187.7	-135.8	-51.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	-18.2	-29.9	-41.9	-63.6	-38.4	-10.7	-9.3	0.0	-212.0	-132.5	-79.5
1981	0.0	0.0	0.0	0.0	0.0	0.0	-20.3	-27.6	-69.0	-51.2	-50.4	-17.7	-20.1	0.0	-256.4	-151.1	-105.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	-16.4	-28.8	-33.6	-25.1	-70.5	-20.6	-22.4	0.0	-217.4	-95.5	-121.9
1983	0.0	0.0	0.0	0.0	0.0	0.3	-18.1	-27.8	-42.4	-49.7	-55.9	-20.6	-23.5	0.0	-237.7	-121.4	-116.6
1984	0.0	0.0	0.0	0.0	0.0	0.0	-11.8	-28.5	-52.5	-25.2	-65.7	-22.6	-18.3	0.0	-224.5	-109.6	-114.9
1985	0.0	0.0	0.0	0.0	0.0	0.0	-21.0	-33.1	-55.1	-57.5	-15.8	-6.8	-6.8	0.0	-196.1	-147.5	-48.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	-14.7	-28.9	-65.0	-67.3	-42.9	-12.3	-10.1	0.0	-241.3	-153.6	-87.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	-22.0	-24.6	-62.0	-38.8	-21.5	-6.9	-6.3	0.0	-182.1	-134.5	-47.6
1988	0.0	0.0	0.0	0.0	0.0	0.0	-21.2	-30.3	-60.2	-42.7	-29.2	-7.8	-6.6	0.0	-198.1	-140.2	-57.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	-20.2	-31.7	-65.1	-63.3	-25.2	-8.7	-9.4	0.0	-223.5	-159.1	-64.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	-23.1	-37.6	-62.5	-60.0	-40.0	-15.1	-15.1	0.0	-253.4	-163.2	-90.2
1991	0.0	0.0	0.0	0.0	0.0	0.0	-21.1	-25.1	-67.2	-65.3	-53.7	-18.9	-19.1	0.0	-270.3	-156.9	-113.4
1992	0.0	0.0	0.0	0.0	0.0	0.0	-20.7	-19.6	-55.1	-24.3	-22.5	-6.1	-5.7	0.0	-154.1	-111.7	-42.4
1993	0.0	0.0	0.0	0.0	0.0	0.0	-25.7	-25.4	-60.0	-68.9	-44.2	-16.0	-16.5	0.0	-256.8	-157.1	-99.7
1994	0.0	0.0	0.0	0.0	0.0	0.0	-19.9	-29.2	-63.8	-40.5	-31.4	-7.1	-5.9	0.0	-198.0	-140.0	-58.0
1995	0.0	0.0	0.0	0.0	0.0	0.2	-25.0	-24.3	-67.2	-55.5	-58.1	-15.0	-13.3	0.0	-258.3	-153.5	-105.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	-6.9	-16.7	-25.8	-35.5	-55.3	-19.2	-19.7	0.0	-179.1	-73.1	-106.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	-10.3	-18.0	-3.3	-5.1	-59.8	-23.3	-25.2	0.0	-145.0	-35.0	-110.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	-21.3	-24.0	-27.5	-45.3	-50.9	-19.4	-14.5	0.0	-202.9	-103.0	-99.9
1999	0.0	0.0	0.0	0.0	0.0	0.1	-18.5	-29.9	-48.3	-28.7	-54.2	-20.7	-21.7	0.0	-221.9	-115.8	-106.2
2000	0.0	0.0	0.0	0.0	0.0	0.0	-14.2	-25.8	-56.9	-53.2	-40.5	-15.0	-7.5	0.0	-213.1	-132.4	-80.7
2001	0.0	0.0	0.0	0.0	0.0	0.0	-18.4	-19.9	-64.4	-17.6	-23.3	-7.4	-6.5	0.0	-157.6	-114.5	-43.1
2002	0.0	0.0	0.0	0.0	0.0	0.0	-22.7	-32.3	-68.9	-59.2	-51.0	-15.0	-12.1	0.0	-261.2	-163.4	-97.9
2003	0.0	0.0	0.0	0.0	0.0	0.0	-25.3	-29.3	-67.6	-65.0	-27.7	-7.0	-6.8	0.0	-228.6	-165.5	-63.1
2004	0.0	0.0	0.0	0.0	0.0	0.0	-23.6	-24.8	-69.4	-64.7	-26.3	-8.3	-9.5	0.0	-226.7	-161.0	-65.7
2005	0.0	0.0	0.0	0.0	0.0	0.0	-22.1	-24.4	-72.1	-50.9	-28.4	-8.3	-7.7	0.0	-213.9	-152.5	-61.3
2006	0.0	0.0	0.0	0.0	0.0	0.0	-5.4	-19.6	-13.5	-43.2	-36.2	-12.0	-6.5	0.0	-136.4	-67.4	-69.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	-15.6	-23.8	-63.1	-46.4	-37.2	-8.5	-7.0	0.0	-201.5	-133.4	-68.1
2008	0.0	0.0	0.0	0.0	0.0	0.0	-23.1	-18.6	-47.2	-40.8	-53.5	-12.8	-15.3	0.0	-211.2	-116.0	-95.2
average	**0**	**0**	**0**	**0**	**0**	**0**	**-18**	125 gas cap spill	**-48**	**-43**	**-43**	**-14**	**-13**	**0**	**-202**	**-118**	**-84**

Q:\RATES\12_RateCase15_final\OPERspillto125GasCap

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	3892	5480	4997	5415	5067	5825	5337	5342	5784
1930	5324	6931	6940	5909	6512	6016	4071	5577	5826	4261	6666	6146	5322	5149	5840
1931	5384	7209	7179	5493	5210	5541	4096	4504	6156	5881	6472	6229	5294	4992	5804
1932	5014	6392	6938	4717	4707	7632	9994	7813	9138	8816	6179	6724	5897	5732	6708
1933	5420	6187	7670	9878	10074	9166	6840	5743	7166	10445	8087	7223	7192	5689	7761
1934	6178	9912	13203	14085	13427	11257	10828	8008	8115	7783	7026	5753	5382	5068	9232
1935	5516	5871	8108	9388	9485	9263	5678	5584	6784	6061	7410	7179	5760	5017	7078
1936	5240	6782	6991	6040	5801	6331	4702	7261	8969	7945	6255	6148	5157	4969	6415
1937	5210	7167	7105	6114	5428	5789	4127	4338	5815	4992	5982	6024	5194	4920	5702
1938	5418	6270	8548	8641	8425	9657	7516	7825	8038	7454	6737	5934	5244	5586	7333
1939	5482	6668	6812	7363	7376	7241	5728	6329	7368	5826	6251	5742	5163	5164	6416
1940	5680	7272	8589	7428	6282	10345	6347	5493	6542	5933	6225	5736	5007	4966	6722
1941	5563	6710	8274	6412	6482	6347	4288	5531	6222	5186	6480	5866	5032	5103	6097
1942	5439	7501	8674	8727	7818	7851	4470	5446	6201	6653	7557	6731	5836	6244	6991
1943	5522	6002	7834	9706	9983	9734	12217	10754	8139	9908	5569	6144	5633	5182	7893
1944	5007	6796	6854	6884	6599	5870	3684	5492	5087	3857	5603	5647	4952	4644	5591
1945	5431	6868	6982	5454	5910	5800	3701	3302	6759	7403	5160	6100	5357	5072	5839
1946	5140	6483	8422	8727	8773	8793	8573	8397	8598	7940	7262	7039	6245	5702	7574
1947	4993	6858	11241	11573	11266	10895	7016	5755	8009	8306	7510	6791	5587	5571	8222
1948	7754	8621	9630	11795	10123	8635	7096	7560	10818	12746	7732	7333	7297	6635	9092
1949	5407	6747	7923	8933	7794	10779	8128	7260	9276	7913	5335	5444	4808	4774	7309
1950	5236	6647	8074	11301	11163	11064	9644	6616	7899	10433	6527	7240	6835	5758	8254
1951	6061	8997	11389	13410	13333	12165	9532	7548	8261	7098	7670	7343	6979	5727	9133
1952	7181	7768	9621	11120	9794	9831	10334	9088	10894	8188	6923	6464	5420	4867	8487
1953	5043	6551	7048	8802	8165	8172	5974	5716	7659	10982	7295	6429	5869	5583	7267
1954	5295	7053	8874	10683	10624	9927	7023	5893	7977	9148	8463	7438	7386	8584	8362
1955	5439	7997	8525	7697	7177	6435	5208	5898	6670	9426	8558	7310	6703	5335	7151
1956	5556	8494	11270	13081	12791	11232	9607	10619	10990	10879	7721	7220	6669	5576	9544
1957	5528	6688	9001	9321	7476	9117	9852	5972	11342	11026	7187	6524	5408	5401	8003
1958	5283	6946	7458	9431	8819	9096	7314	6379	9811	8854	6684	5938	5600	5387	7527
1959	5401	7425	10676	12647	11972	10390	8311	6528	7367	10007	6872	7432	7389	8643	8832
1960	8817	9974	10648	10862	8650	8921	11647	7636	7133	7615	7296	6657	5426	5273	8406
1961	5407	6737	8214	9996	9985	9829	7867	6002	7932	10653	7371	6714	5903	5243	7871
1962	5183	6854	7493	9275	9040	6809	10259	8300	7764	8280	5398	6205	5429	5122	7175
1963	5714	7888	10227	10726	9100	8565	5341	5877	6475	6647	7181	6607	5718	5792	7504
1964	5131	6428	8088	8105	7485	6803	8086	5387	7454	12024	8128	7310	7083	6467	7499
1965	6174	7598	11453	14282	13488	11783	6340	8722	9172	8897	6982	7178	6603	5323	9114
1966	5606	7321	8590	9056	8277	6840	9770	6566	6609	7109	7524	7139	5689	5456	7240
1967	5225	6573	8419	11670	11375	10649	6136	4825	7031	10898	7468	7141	6384	5695	8086
1968	5403	7312	8582	10750	9605	9730	5483	5892	6034	8191	7559	7297	6494	7177	7740
1969	6360	8627	9663	12719	12869	10110	9905	8051	9687	7954	7538	6995	6304	5524	8869
1970	5278	7066	7371	9461	8957	8431	6666	5347	6845	9752	6150	5713	5164	5302	7157
1971	5161	6680	7683	12850	13453	12038	9228	7458	11190	11965	7840	7376	7290	6172	9201
1972	5575	6873	8805	12437	12961	12746	10916	6541	10271	12528	8153	7379	7344	6847	9429
1973	5555	7016	8335	9373	7810	6379	3451	5624	6002	5428	6074	5966	5001	5028	6416
1974	5377	6042	9805	14774	14456	12252	10572	8764	9787	11997	8157	7317	7306	6548	9654
1975	4991	6857	7720	8816	9746	9141	5601	5601	7609	11277	8234	7284	6507	6199	7743
1976	6412	8976	12577	12339	12264	11373	10456	7811	9848	7953	7838	7357	7302	9149	9593
1977	5650	6981	7010	6878	6916	6248	3689	5567	5594	4144	6097	5946	5092	4227	5823
1978	4832	5872	9304	9104	9174	8785	9855	6069	7568	6086	7150	6155	5386	6586	7341
1979	5785	7008	7541	8595	6335	8519	5394	6116	7856	5648	5528	5568	4976	5240	6599
1980	5320	6905	6475	7790	7233	6231	6797	7034	9602	8357	5825	6056	5111	5595	6814
1981	5462	6871	10615	11303	10292	9018	4232	6021	6984	10035	7664	7420	7311	6162	8068
1982	5278	7255	9130	10738	13112	12833	8911	6434	9122	10913	7019	7317	7296	7400	8955
1983	6257	7358	9478	11328	10873	12035	8486	5859	8262	8301	7674	7290	7200	6022	8495
1984	5398	9267	9426	10559	10539	9989	10758	7876	8312	11219	7396	7206	6212	6017	8664
1985	5379	7213	8412	8591	8105	7875	7475	6390	8117	6312	4960	5109	4663	5011	6810
1986	5906	8400	8458	9396	10334	13093	9395	7162	6839	8035	6710	6370	5330	5333	8038
1987	5067	6621	8571	8184	6217	8310	4841	5586	7058	7322	6044	5544	4850	4845	6562
1988	5268	6897	6444	5975	5454	6104	4022	5088	5880	5399	6916	6126	5366	4820	5793
1989	5146	6307	8210	6579	6367	7510	7471	7612	7418	6078	5468	5712	5084	5080	6427
1990	5229	7251	9006	9959	9839	9348	6390	8087	7422	8271	6813	7031	6164	5278	7676
1991	4853	9108	10030	11163	10769	9887	8069	6479	7565	7990	7874	7234	7114	5443	8249
1992	5039	6799	7232	7742	6326	8187	4267	5280	5905	5664	5877	5634	4968	4613	6127
1993	5414	6809	7458	6030	5299	6968	4239	5872	7191	6377	5992	5890	5164	5103	6111
1994	5156	7360	7375	6097	6439	5928	3842	5194	6899	7063	6326	5968	5170	5139	6154
1995	5191	6284	7526	6832	10055	10245	5657	5279	6055	8044	6232	5859	5219	5684	6909
1996	6488	10185	14141	14420	13243	13287	9610	9159	8833	10024	7981	7347	7224	5444	10056
1997	5191	7086	9402	14166	14378	13415	9980	9718	11848	12570	7999	7253	7216	7148	9997
1998	8063	8511	9183	8622	9172	7934	5264	6126	9947	9506	6815	7124	5986	5401	7946
1999	5152	6237	8880	12300	12279	12153	7859	6522	7836	10701	7890	7282	7243	6595	8688
2000	5450	9391	10217	9904	9501	9007	9334	8167	6659	6778	7288	6842	5012	5250	7835
2001	5227	6858	6957	6891	6601	6259	3650	5568	5403	3703	5954	5682	4949	4059	5654
2002	4716	6244	7770	6583	6876	6704	6476	7431	6318	8764	7791	6785	5699	5291	6683
2003	4946	7244	7101	6150	6405	9422	6688	6054	6589	8119	5522	5295	4747	4725	6466
2004	5513	7060	8829	6781	5971	8259	5752	5708	6492	6912	5467	5545	5060	6545	6575
2005	5504	6966	8883	8939	8404	7096	4364	5924	6972	7495	6201	6245	5204	5234	6874
2006	5331	6895	8209	10292	9815	9509	10998	8356	10711	8532	6601	6510	4965	4952	8011
2007	4768	7200	8322	10004	8010	10986	8403	6691	7230	7130	7422	6020	5052	4600	7399
2008	5529	6826	7707	7619	7486	7001	5741	4694	8978	10460	7071	6381	6128	5291	7120

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5972	4920	6743	7363	8020	5741	6361	5654	5342	6388
1930	5324	6931	6940	5909	6512	6034	5629	7569	7927	5427	7775	6737	5654	5149	6395
1931	5384	7209	7179	5493	5210	5559	5818	5312	8451	6853	7168	6823	5528	4992	6278
1932	5014	6392	6938	4717	4707	7650	11452	11328	12537	12346	7722	7806	6497	5732	7692
1933	5420	6187	7670	9878	10074	9184	8712	8187	10462	13112	10575	8663	8552	5689	8770
1934	6178	9912	13203	14085	13427	11257	12094	11515	11208	9726	8148	6302	5745	5068	9984
1935	5516	5871	8108	9388	9485	9281	7569	7566	9857	8769	9318	8598	6402	5017	7971
1936	5240	6782	6991	6040	5801	6350	6715	10734	11803	11063	7458	6883	5502	4969	7284
1937	5210	7167	7105	6114	5428	5808	5264	5227	8347	6720	6915	6681	5529	4920	6265
1938	5418	6270	8548	8641	8425	9656	9472	11456	11205	11060	8638	6746	5666	5586	8341
1939	5482	6668	6812	7363	7376	7259	7814	9028	10741	6991	7200	6312	5488	5164	7115
1940	5680	7272	8589	7428	6282	10343	8455	8093	9767	7567	7098	6355	5298	4966	7434
1941	5563	6710	8274	6412	6482	6365	5724	6620	8742	7256	7830	6590	5432	5103	6749
1942	5439	7501	8674	8727	7818	7870	6594	8620	9392	10020	9784	7801	6409	6244	8017
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8428	7544	6439	5182	8738
1944	5007	6796	6854	6884	6599	5889	4905	6803	6958	5270	6566	6220	5264	4644	6089
1945	5431	6868	6982	5454	5910	5818	4907	3743	10283	10983	6252	6923	5814	5072	6648
1946	5140	6483	8422	8727	8773	8811	10296	11961	11591	11256	9276	8378	7080	5702	8583
1947	4993	6858	11241	11573	11266	10903	9008	8691	11635	11930	9613	7982	6112	5571	9282
1948	7754	8621	9630	11795	10123	8653	9111	11114	12577	12746	10385	9022	8801	6635	9830
1949	5407	6747	7923	8933	7794	10778	9959	10887	11866	11426	6312	6055	5111	4774	8164
1950	5236	6647	8074	11301	11163	11048	11084	10150	11436	11857	9509	9198	8258	5758	9270
1951	6061	8997	11389	13410	13333	12165	10971	11174	11427	10670	10258	8935	8185	5727	10242
1952	7181	7768	9621	11120	9794	9831	11268	12018	12227	11820	9041	7572	5974	4867	9305
1953	5043	6551	7048	8802	8165	8190	7844	8060	11175	12896	9979	7579	6596	5583	8205
1954	5295	7053	8874	10683	10624	9935	9150	9168	11431	11913	11141	9430	9043	8584	9488
1955	5439	7997	8525	7697	7177	6453	7111	7847	9962	12650	11235	9012	7761	5335	8199
1956	5556	8494	11270	13081	12791	11215	10960	12041	11795	12577	10327	8950	7864	5576	10208
1957	5528	6688	9001	9321	7476	9116	11306	8987	12996	13665	9114	7623	5916	5401	8775
1958	5283	6946	7458	9431	8819	9097	9320	9895	11914	12234	8203	6737	6145	5387	8396
1959	5401	7425	10676	12647	11972	10390	10230	9059	10789	12488	9035	8999	8740	8643	9817
1960	8817	9974	10648	10862	8650	8939	12445	10869	10372	11187	9114	7763	5904	5273	9360
1961	5407	6737	8214	9996	9985	9838	9843	8130	11417	12775	8901	7630	6419	5243	8701
1962	5183	6854	7493	9275	9040	6827	11748	11656	11325	11969	6587	7199	5939	5122	8145
1963	5714	7888	10227	10726	9100	8583	7302	7869	10002	10208	9185	7601	6295	5792	8497
1964	5131	6428	8088	8105	7485	6822	10009	7826	11055	12829	10971	8988	8435	6467	8419
1965	6174	7598	11453	14282	13488	11776	8456	12144	11862	11986	9631	8952	8025	5323	10184
1966	5606	7321	8590	9056	8277	6858	11401	8885	9339	9500	9244	8324	6147	5456	8047
1967	5225	6573	8419	11670	11375	10649	7960	5996	10637	12210	10076	8571	7251	5695	8942
1968	5403	7312	8582	10750	9605	9738	7280	7187	8456	11840	9567	8733	7477	7177	8643
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11504	9633	8123	7035	5524	9751
1970	5278	7066	7371	9461	8957	8430	8523	6702	10429	12515	8192	6401	5531	5302	8039
1971	5161	6680	7683	12850	13453	12023	10823	11038	12099	12486	10917	9258	8686	6172	9933
1972	5575	6873	8805	12437	12961	12746	11963	9951	12189	12528	10894	9283	8802	6847	10148
1973	5555	7016	8335	9373	7810	6398	4137	6728	8565	7132	7009	6560	5266	5028	6964
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11272	9178	8801	6548	10309
1975	4991	6857	7720	8816	9746	9144	7687	8089	10875	12735	11700	9116	7787	6199	8754
1976	6412	8976	12577	12339	12264	11369	11646	11489	12132	11659	10609	9653	9374	9149	10709
1977	5650	6981	7010	6878	6916	6267	4452	6582	6927	4523	6649	6413	5289	4227	6117
1978	4832	5872	9304	9104	9174	8803	11156	9172	11264	9588	9611	7083	5913	6586	8396
1979	5785	7008	7541	8595	6335	8528	7288	8288	11520	7763	6293	6022	5243	5240	7347
1980	5320	6905	6475	7790	7233	6250	8599	10155	12779	12017	7233	6781	5445	5595	7750
1981	5462	6871	10615	11303	10292	9018	5701	8030	10372	13349	9915	8863	8581	6162	9077
1982	5278	7255	9130	10738	13112	12833	10560	9969	11853	12588	10364	9137	8860	7400	9965
1983	6257	7358	9478	11328	10873	12020	10208	8872	11388	11608	10511	9094	8825	6022	9612
1984	5398	9267	9426	10559	10539	9989	11867	11496	11752	12986	10375	9089	7293	6017	9671
1985	5379	7213	8412	8591	8105	7893	9347	9949	11785	8954	5439	5495	4860	5011	7628
1986	5906	8400	8458	9396	10334	13093	10824	10737	10382	11734	8234	7224	5747	5333	9032
1987	5067	6621	8571	8184	6217	8328	6483	7352	9756	8969	6802	6010	5067	4845	7161
1988	5268	6897	6444	5975	5454	6123	5569	7348	8296	7062	8122	6739	5690	4820	6433
1989	5146	6307	8210	6579	6367	7529	9462	11228	10812	9016	6321	6283	5448	5080	7300
1990	5229	7251	9006	9959	9839	9366	8331	11583	10392	11474	8497	8256	7001	5278	8647
1991	4853	9108	10030	11163	10769	9906	9789	8595	10923	11351	10393	8850	8377	5443	9305
1992	5039	6799	7232	7742	6326	8205	5713	6540	8058	6571	6678	6078	5215	4613	6593
1993	5414	6809	7458	6030	5299	6987	6395	8130	10744	9812	7595	6935	5865	5103	7087
1994	5156	7360	7375	6097	6439	5946	5138	7166	9586	8674	7529	6490	5409	5139	6785
1995	5191	6284	7526	6832	10055	10237	7778	7457	9570	11692	8618	6972	5846	5684	7959
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	10794	9014	8544	5444	11012
1997	5191	7086	9402	14166	14378	13415	11189	12273	12090	12934	10972	9182	8866	7148	10607
1998	8063	8511	9183	8622	9172	7952	7264	8467	12189	12784	9273	8772	6869	5401	8901
1999	5152	6237	8880	12300	12279	12154	9803	10043	11397	12895	10701	9268	8874	6595	9787
2000	5450	9391	10217	9904	9501	9025	11018	11792	10132	9617	9037	8012	5296	5250	8790
2001	5227	6858	6957	6891	6601	6277	4778	6776	7703	4087	6724	6163	5183	4059	6073
2002	4716	6244	7770	6583	6876	6722	8600	10804	9546	12144	10143	7905	6236	5291	7732
2003	4946	7244	7101	6150	6405	9440	8801	8677	9855	11719	6389	5751	4965	4725	7337
2004	5513	7060	8829	6781	5971	8277	7774	7926	9794	9910	6377	6075	5361	6545	7387
2005	5504	6966	8883	8939	8404	7115	5851	7499	10456	9825	7215	6854	5534	5234	7614
2006	5331	6895	8209	10292	9815	9518	11911	11650	12364	11777	8166	7472	5219	4952	8775
2007	4768	7200	8322	10004	8010	10995	9857	9082	10581	9183	8962	6660	5348	4600	8181
2008	5529	6826	7707	7619	7486	7020	7691	6276	12166	13324	9399	7351	6930	5291	8043

spill to 125 gas cap - actual spill

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS
(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	-18	-1028	-1263	-2366	-2605	-674	-536	-317	0	-604
1930	0	0	0	0	0	-18	-1558	-1992	-2101	-1166	-1109	-591	-332	0	-555
1931	0	0	0	0	0	-18	-1722	-808	-2295	-972	-696	-594	-234	0	-474
1932	0	0	0	0	0	-18	-1458	-3515	-3399	-3530	-1543	-1082	-600	0	-984
1933	0	0	0	0	0	-18	-1872	-2444	-3296	-2667	-2488	-1440	-1360	0	-1009
1934	0	0	0	0	0	0	-1266	-3507	-3093	-1943	-1122	-549	-363	0	-752
1935	0	0	0	0	0	-18	-1891	-1982	-3073	-2708	-1908	-1419	-642	0	-893
1936	0	0	0	0	0	-19	-2013	-3473	-2834	-3118	-1203	-735	-345	0	-869
1937	0	0	0	0	0	-19	-1137	-889	-2532	-1728	-933	-657	-335	0	-563
1938	0	0	0	0	0	1	-1956	-3631	-3167	-3606	-1901	-812	-422	0	-1008
1939	0	0	0	0	0	-18	-2086	-2699	-3373	-1165	-949	-570	-325	0	-699
1940	0	0	0	0	0	2	-2108	-2600	-3225	-1634	-873	-619	-291	0	-712
1941	0	0	0	0	0	-18	-1436	-1089	-2520	-2070	-1350	-724	-400	0	-652
1942	0	0	0	0	0	-19	-2124	-3174	-3191	-3367	-2227	-1070	-573	0	-1026
1943	0	0	0	0	0	1	574	-1579	-3157	-2443	-2859	-1400	-806	0	-845
1944	0	0	0	0	0	-19	-1221	-1311	-1871	-1413	-963	-573	-312	0	-498
1945	0	0	0	0	0	-18	-1206	-441	-3524	-3580	-1092	-823	-457	0	-809
1946	0	0	0	0	0	-18	-1723	-3564	-2993	-3316	-2014	-1339	-835	0	-1009
1947	0	0	0	0	0	-8	-1992	-2936	-3626	-3624	-2103	-1191	-525	0	-1060
1948	0	0	0	0	0	-18	-2015	-3554	-1759	0	-2653	-1689	-1504	0	-738
1949	0	0	0	0	0	1	-1831	-3627	-2590	-3513	-977	-611	-303	0	-855
1950	0	0	0	0	0	16	-1440	-3534	-3537	-1424	-2982	-1958	-1423	0	-1016
1951	0	0	0	0	0	0	-1439	-3626	-3166	-3572	-2588	-1592	-1206	0	-1109
1952	0	0	0	0	0	0	-934	-2930	-1333	-3632	-2118	-1108	-554	0	-818
1953	0	0	0	0	0	-18	-1870	-2344	-3516	-1914	-2684	-1150	-727	0	-938
1954	0	0	0	0	0	-8	-2127	-3275	-3454	-2765	-2678	-1992	-1657	0	-1126
1955	0	0	0	0	0	-18	-1903	-1949	-3292	-3224	-2677	-1702	-1058	0	-1048
1956	0	0	0	0	0	17	-1353	-1422	-805	-1698	-2606	-1730	-1195	0	-664
1957	0	0	0	0	0	1	-1454	-3015	-1654	-2639	-1927	-1099	-508	0	-772
1958	0	0	0	0	0	-1	-2006	-3516	-2103	-3380	-1519	-799	-545	0	-869
1959	0	0	0	0	0	0	-1919	-2531	-3422	-2481	-2163	-1567	-1351	0	-985
1960	0	0	0	0	0	-18	-798	-3233	-3239	-3572	-1818	-1106	-478	0	-954
1961	0	0	0	0	0	-9	-1976	-2128	-3485	-2122	-1530	-916	-516	0	-830
1962	0	0	0	0	0	-18	-1489	-3356	-3561	-3689	-1189	-994	-510	0	-970
1963	0	0	0	0	0	-18	-1961	-1992	-3527	-3561	-2004	-994	-577	0	-993
1964	0	0	0	0	0	-19	-1923	-2439	-3601	-805	-2843	-1678	-1352	0	-920
1965	0	0	0	0	0	7	-2116	-3422	-2690	-3089	-2649	-1774	-1422	0	-1070
1966	0	0	0	0	0	-18	-1631	-2319	-2730	-2391	-1720	-1185	-458	0	-807
1967	0	0	0	0	0	0	-1824	-1171	-3606	-1312	-2608	-1430	-867	0	-856
1968	0	0	0	0	0	-8	-1797	-1295	-2422	-3649	-2008	-1436	-983	0	-903
1969	0	0	0	0	0	4	-1164	-3020	-1914	-3550	-2095	-1128	-731	0	-882
1970	0	0	0	0	0	1	-1857	-1355	-3584	-2763	-2042	-688	-367	0	-882
1971	0	0	0	0	0	15	-1595	-3580	-909	-521	-3077	-1882	-1396	0	-732
1972	0	0	0	0	0	0	-1047	-3410	-1918	0	-2741	-1904	-1458	0	-719
1973	0	0	0	0	0	-19	-686	-1104	-2563	-1704	-935	-594	-265	0	-548
1974	0	0	0	0	0	0	-328	-2239	-1680	0	-3115	-1861	-1495	0	-655
1975	0	0	0	0	0	-3	-2086	-2488	-3266	-1458	-3466	-1832	-1280	0	-1011
1976	0	0	0	0	0	4	-1190	-3678	-2284	-3706	-2771	-2296	-2072	0	-1116
1977	0	0	0	0	0	-19	-763	-1015	-1333	-379	-552	-467	-197	0	-294
1978	0	0	0	0	0	-18	-1301	-3103	-3696	-3502	-2461	-928	-527	0	-1055
1979	0	0	0	0	0	-9	-1894	-2172	-3664	-2115	-765	-454	-267	0	-748
1980	0	0	0	0	0	-19	-1802	-3121	-3177	-3660	-1408	-725	-334	0	-936
1981	0	0	0	0	0	0	-1469	-2009	-3388	-3314	-2251	-1443	-1270	0	-1009
1982	0	0	0	0	0	0	-1649	-3535	-2731	-1675	-3345	-1820	-1564	0	-1010
1983	0	0	0	0	0	15	-1722	-3013	-3126	-3307	-2837	-1804	-1625	0	-1117
1984	0	0	0	0	0	0	-1109	-3620	-3440	-1767	-2979	-1883	-1081	0	-1007
1985	0	0	0	0	0	-18	-1872	-3559	-3668	-2642	-479	-386	-197	0	-818
1986	0	0	0	0	0	0	-1429	-3575	-3543	-3699	-1524	-854	-417	0	-994
1987	0	0	0	0	0	-18	-1642	-1766	-2698	-1647	-758	-466	-217	0	-599
1988	0	0	0	0	0	-19	-1547	-2260	-2416	-1663	-1206	-613	-324	0	-640
1989	0	0	0	0	0	-19	-1991	-3616	-3394	-2938	-853	-571	-364	0	-873
1990	0	0	0	0	0	-18	-1941	-3496	-2970	-3203	-1684	-1225	-837	0	-971
1991	0	0	0	0	0	-19	-1720	-2116	-3358	-3361	-2519	-1616	-1263	0	-1056
1992	0	0	0	0	0	-18	-1446	-1260	-2153	-907	-801	-444	-247	0	-466
1993	0	0	0	0	0	-19	-2156	-2258	-3553	-3435	-1603	-1045	-701	0	-976
1994	0	0	0	0	0	-18	-1296	-1972	-2687	-1611	-1203	-522	-239	0	-631
1995	0	0	0	0	0	8	-2121	-2178	-3515	-3648	-2386	-1113	-627	0	-1050
1996	0	0	0	0	0	0	-1147	-2774	-2541	-2623	-2813	-1667	-1320	0	-956
1997	0	0	0	0	0	0	-1209	-2555	-242	-364	-2973	-1929	-1650	0	-610
1998	0	0	0	0	0	-18	-2000	-2341	-2242	-3278	-2458	-1648	-883	0	-955
1999	0	0	0	0	0	-1	-1944	-3521	-3561	-2194	-2811	-1986	-1631	0	-1099
2000	0	0	0	0	0	-18	-1684	-3625	-3473	-2839	-1749	-1170	-284	0	-955
2001	0	0	0	0	0	-18	-1128	-1208	-2300	-384	-770	-481	-234	0	-419
2002	0	0	0	0	0	-18	-2124	-3373	-3228	-3380	-2352	-1120	-537	0	-1049
2003	0	0	0	0	0	-18	-2113	-2623	-3266	-3600	-867	-456	-218	0	-871
2004	0	0	0	0	0	-18	-2022	-2218	-3302	-2998	-910	-530	-301	0	-812
2005	0	0	0	0	0	-19	-1487	-1575	-3484	-2330	-1014	-609	-330	0	-740
2006	0	0	0	0	0	-9	-913	-3294	-1653	-3245	-1565	-962	-254	0	-764
2007	0	0	0	0	0	-9	-1454	-2391	-3351	-2053	-1540	-640	-296	0	-782
2008	0	0	0	0	0	-19	-1950	-1582	-3188	-2864	-2328	-970	-802	0	-923
average	**0**	**0**	**0**	**0**	**0**	**-10**	**-1588**	**-2540**	**-3245**	**-2443**	**-1874**	**-1125**	**-735**	**0**	**-850**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
							average	**24.75941**	**20.40174**	**23.33487**	**29.11119**	**32.21662**		

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	-0.5	-11.6	-14.2	-49.7	-56.8	-17.8	-6.8	-4.3	0.0	-161.6	-113.4	-47.8
1930	0.0	0.0	0.0	0.0	0.0	-0.5	-16.7	-21.4	-43.7	-28.6	-27.0	-7.7	-4.6	0.0	-150.1	-100.9	-48.8
1931	0.0	0.0	0.0	0.0	0.0	-0.5	-19.3	-9.1	-46.3	-23.6	-18.2	-7.8	-3.3	0.0	-128.1	-90.4	-37.2
1932	0.0	0.0	0.0	0.0	0.0	-0.4	-11.6	-27.9	-43.9	-52.2	-34.4	-12.6	-7.4	0.0	-190.6	-118.2	-71.9
1933	0.0	0.0	0.0	0.0	0.0	-0.4	-19.1	-24.9	-57.9	-38.8	-46.3	-15.3	-15.4	0.0	-218.1	-127.8	-89.9
1934	0.0	0.0	0.0	0.0	0.0	0.0	-10.2	-28.4	-51.0	-38.7	-27.0	-6.8	-4.8	0.0	-166.8	-115.4	-51.4
1935	0.0	0.0	0.0	0.0	0.0	-0.4	-18.6	-19.5	-51.5	-51.3	-41.2	-16.4	-7.9	0.0	-206.8	-123.8	-82.6
1936	0.0	0.0	0.0	0.0	0.0	-0.5	-19.6	-33.8	-34.4	-49.7	-28.1	-9.2	-4.6	0.0	-179.8	-120.9	-58.4
1937	0.0	0.0	0.0	0.0	0.0	-0.5	-12.4	-9.7	-47.4	-36.1	-22.1	-7.8	-4.3	0.0	-140.3	-93.6	-46.2
1938	0.0	0.0	0.0	0.0	0.0	0.0	-14.3	-26.6	-38.9	-56.7	-40.7	-9.6	-5.3	0.0	-192.1	-117.6	-74.5
1939	0.0	0.0	0.0	0.0	0.0	-0.5	-19.3	-25.0	-51.6	-24.9	-22.7	-7.1	-4.3	0.0	-155.5	-112.6	-42.5
1940	0.0	0.0	0.0	0.0	0.0	0.0	-20.1	-24.8	-55.9	-34.2	-21.0	-7.6	-3.8	0.0	-167.5	-123.7	-43.9
1941	0.0	0.0	0.0	0.0	0.0	-0.5	-15.4	-11.6	-48.1	-44.7	-31.4	-9.1	-5.3	0.0	-166.1	-104.9	-60.7
1942	0.0	0.0	0.0	0.0	0.0	-0.4	-20.3	-30.4	-56.6	-61.2	-45.4	-12.4	-7.1	0.0	-233.8	-148.1	-85.3
1943	0.0	0.0	0.0	0.0	0.0	0.0	3.0	-8.2	-33.7	-28.0	-59.4	-16.0	-9.8	0.0	-152.0	-57.6	-94.5
1944	0.0	0.0	0.0	0.0	0.0	-0.5	-13.7	-14.7	-41.5	-35.1	-25.0	-7.6	-4.4	0.0	-142.6	-93.3	-48.8
1945	0.0	0.0	0.0	0.0	0.0	-0.5	-13.5	-4.9	-55.4	-57.9	-26.6	-9.9	-5.9	0.0	-174.6	-112.4	-61.7
1946	0.0	0.0	0.0	0.0	0.0	-0.4	-11.7	-24.2	-34.4	-46.7	-39.2	-14.0	-9.3	0.0	-180.0	-101.4	-78.2
1947	0.0	0.0	0.0	0.0	0.0	-0.2	-17.2	-25.3	-51.4	-56.2	-44.0	-14.0	-6.6	0.0	-214.8	-131.3	-83.4
1948	0.0	0.0	0.0	0.0	0.0	-0.4	-17.0	-30.0	-18.9	0.0	-50.9	-17.6	-16.7	0.0	-151.6	-66.0	-85.3
1949	0.0	0.0	0.0	0.0	0.0	0.0	-14.4	-28.5	-30.5	-53.6	-23.7	-7.6	-4.0	0.0	-162.2	-109.1	-53.1
1950	0.0	0.0	0.0	0.0	0.0	0.3	-11.1	-27.3	-49.3	-19.5	-58.7	-20.2	-15.7	0.0	-201.6	-100.8	-101.1
1951	0.0	0.0	0.0	0.0	0.0	0.0	-10.5	-26.6	-42.0	-59.3	-51.5	-17.4	-14.1	0.0	-221.4	-118.7	-102.7
1952	0.0	0.0	0.0	0.0	0.0	0.0	-6.5	-20.3	-13.3	-52.4	-45.2	-12.9	-6.9	0.0	-157.6	-75.1	-82.5
1953	0.0	0.0	0.0	0.0	0.0	-0.4	-18.4	-23.1	-50.8	-24.1	-53.0	-13.5	-9.1	0.0	-192.5	-108.3	-83.8
1954	0.0	0.0	0.0	0.0	0.0	-0.2	-19.3	-29.7	-49.6	-40.4	-46.7	-20.1	-17.9	0.0	-223.9	-125.5	-98.2
1955	0.0	0.0	0.0	0.0	0.0	-0.4	-19.1	-19.5	-56.9	-43.0	-45.6	-18.0	-11.9	0.0	-214.5	-124.2	-89.9
1956	0.0	0.0	0.0	0.0	0.0	0.3	-9.4	-9.8	-9.2	-19.5	-49.4	-17.9	-13.2	0.0	-128.0	-41.4	-86.9
1957	0.0	0.0	0.0	0.0	0.0	0.0	-11.8	-24.6	-19.1	-35.3	-41.1	-12.6	-6.2	0.0	-150.7	-79.0	-71.7
1958	0.0	0.0	0.0	0.0	0.0	0.0	-17.2	-30.1	-22.7	-47.3	-33.1	-9.3	-6.8	0.0	-166.5	-101.5	-65.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	-15.9	-20.9	-49.8	-32.7	-41.2	-15.5	-14.3	0.0	-190.3	-108.4	-81.9
1960	0.0	0.0	0.0	0.0	0.0	-0.4	-5.9	-24.0	-51.9	-61.1	-40.1	-13.5	-6.2	0.0	-203.1	-122.5	-80.2
1961	0.0	0.0	0.0	0.0	0.0	-0.2	-18.8	-20.2	-54.4	-32.5	-34.0	-10.8	-6.5	0.0	-177.5	-115.1	-62.1
1962	0.0	0.0	0.0	0.0	0.0	-0.5	-10.4	-23.4	-50.2	-59.8	-30.3	-12.6	-6.9	0.0	-194.0	-123.9	-69.6
1963	0.0	0.0	0.0	0.0	0.0	-0.4	-19.4	-19.7	-57.3	-63.7	-43.3	-11.6	-7.2	0.0	-222.7	-139.0	-83.3
1964	0.0	0.0	0.0	0.0	0.0	-0.5	-18.2	-23.1	-60.5	-10.7	-53.4	-18.2	-15.6	0.0	-200.1	-108.9	-90.8
1965	0.0	0.0	0.0	0.0	0.0	0.1	-17.8	-28.7	-36.3	-54.0	-57.4	-19.1	-16.3	0.0	-229.5	-118.8	-110.9
1966	0.0	0.0	0.0	0.0	0.0	-0.5	-13.7	-19.5	-49.6	-46.3	-38.5	-14.3	-5.9	0.0	-188.3	-113.8	-74.1
1967	0.0	0.0	0.0	0.0	0.0	0.0	-19.3	-12.4	-51.9	-15.1	-50.7	-16.5	-10.7	0.0	-176.5	-93.6	-82.9
1968	0.0	0.0	0.0	0.0	0.0	-0.2	-18.4	-13.3	-44.4	-54.1	-40.6	-15.9	-11.6	0.0	-198.5	-112.2	-86.2
1969	0.0	0.0	0.0	0.0	0.0	0.1	-7.1	-18.4	-13.9	-44.9	-39.8	-11.6	-8.0	0.0	-143.7	-69.3	-74.4
1970	0.0	0.0	0.0	0.0	0.0	0.0	-17.5	-12.8	-50.5	-36.6	-44.8	-8.0	-4.6	0.0	-174.8	-105.3	-69.5
1971	0.0	0.0	0.0	0.0	0.0	0.2	-10.2	-22.9	-7.3	-5.0	-50.6	-18.4	-14.5	0.0	-128.7	-43.8	-85.2
1972	0.0	0.0	0.0	0.0	0.0	0.0	-6.9	-22.3	-19.1	0.0	-48.2	-18.2	-14.8	0.0	-129.5	-48.3	-81.2
1973	0.0	0.0	0.0	0.0	0.0	-0.4	-7.4	-11.9	-45.7	-34.6	-21.8	-7.1	-3.4	0.0	-132.3	-88.1	-43.8
1974	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-10.3	-12.1	0.0	-47.9	-16.5	-14.1	0.0	-102.4	-23.9	-78.5
1975	0.0	0.0	0.0	0.0	0.0	-0.1	-19.5	-23.3	-28.7	-17.9	-63.0	-20.9	-15.6	0.0	-189.1	-83.5	-105.5
1976	0.0	0.0	0.0	0.0	0.0	0.1	-9.4	-29.1	-28.5	-59.2	-53.6	-23.7	-22.8	0.0	-226.1	-106.4	-119.8
1977	0.0	0.0	0.0	0.0	0.0	-0.5	-8.6	-11.4	-29.8	-9.9	-13.9	-5.9	-2.7	0.0	-82.6	-56.4	-25.7
1978	0.0	0.0	0.0	0.0	0.0	-0.4	-10.1	-24.1	-52.4	-63.9	-50.9	-10.7	-6.5	0.0	-219.0	-129.2	-89.4
1979	0.0	0.0	0.0	0.0	0.0	-0.2	-19.7	-22.6	-54.8	-42.7	-18.2	-5.6	-3.5	0.0	-167.3	-125.6	-41.5
1980	0.0	0.0	0.0	0.0	0.0	-0.5	-16.0	-27.8	-41.9	-60.4	-32.8	-9.0	-4.4	0.0	-192.8	-126.0	-66.3
1981	0.0	0.0	0.0	0.0	0.0	0.0	-15.1	-20.7	-58.3	-51.2	-46.5	-16.2	-15.2	0.0	-223.3	-128.3	-95.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	-12.7	-27.3	-33.6	-25.1	-65.4	-18.5	-16.9	0.0	-199.6	-90.4	-109.2
1983	0.0	0.0	0.0	0.0	0.0	0.3	-14.8	-25.9	-42.4	-49.7	-52.3	-18.6	-17.9	0.0	-221.5	-116.3	-105.4
1984	0.0	0.0	0.0	0.0	0.0	0.0	-8.5	-27.8	-52.5	-25.2	-59.9	-20.2	-12.4	0.0	-206.6	-105.7	-100.9
1985	0.0	0.0	0.0	0.0	0.0	-0.4	-16.4	-31.2	-55.1	-52.5	-12.8	-5.2	-2.8	0.0	-176.4	-137.7	-38.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	-11.1	-27.7	-60.1	-65.5	-36.1	-10.5	-5.5	0.0	-216.6	-142.5	-74.0
1987	0.0	0.0	0.0	0.0	0.0	-0.4	-16.8	-18.0	-50.0	-34.9	-19.2	-6.1	-3.0	0.0	-148.5	-108.1	-40.0
1988	0.0	0.0	0.0	0.0	0.0	-0.5	-15.8	-23.1	-47.2	-36.0	-27.1	-7.5	-4.2	0.0	-161.4	-110.1	-50.8
1989	0.0	0.0	0.0	0.0	0.0	-0.5	-16.5	-29.9	-58.3	-58.4	-21.7	-7.4	-5.0	0.0	-197.9	-143.7	-53.7
1990	0.0	0.0	0.0	0.0	0.0	-0.4	-17.6	-31.6	-51.6	-56.2	-36.7	-13.9	-10.1	0.0	-218.0	-138.2	-79.4
1991	0.0	0.0	0.0	0.0	0.0	-0.4	-15.8	-19.5	-57.1	-60.5	-49.8	-17.5	-14.6	0.0	-235.2	-132.8	-102.0
1992	0.0	0.0	0.0	0.0	0.0	-0.4	-15.4	-13.4	-42.7	-21.1	-20.3	-5.7	-3.4	0.0	-122.4	-85.5	-36.4
1993	0.0	0.0	0.0	0.0	0.0	-0.5	-21.9	-22.9	-58.7	-64.8	-39.0	-13.6	-9.7	0.0	-231.1	-146.7	-83.9
1994	0.0	0.0	0.0	0.0	0.0	-0.5	-14.2	-21.5	-51.6	-34.6	-28.7	-6.4	-3.1	0.0	-160.7	-110.4	-49.9
1995	0.0	0.0	0.0	0.0	0.0	0.2	-21.2	-21.8	-61.4	-55.4	-51.0	-12.8	-7.7	0.0	-231.2	-141.3	-90.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	-6.9	-16.7	-25.8	-35.5	-50.9	-17.3	-14.6	0.0	-167.7	-73.1	-94.6
1997	0.0	0.0	0.0	0.0	0.0	0.0	-8.5	-18.0	-3.3	-5.1	-55.0	-20.8	-19.0	0.0	-129.7	-33.2	-96.5
1998	0.0	0.0	0.0	0.0	0.0	-0.4	-18.5	-21.6	-27.5	-45.3	-49.2	-17.5	-10.0	0.0	-190.0	-97.7	-91.9
1999	0.0	0.0	0.0	0.0	0.0	0.0	-15.8	-28.7	-48.3	-28.7	-49.3	-18.8	-16.4	0.0	-206.1	-112.0	-94.1
2000	0.0	0.0	0.0	0.0	0.0	-0.4	-12.0	-25.8	-52.8	-49.3	-37.1	-13.7	-3.6	0.0	-194.7	-123.5	-70.8
2001	0.0	0.0	0.0	0.0	0.0	-0.5	-12.9	-13.8	-50.2	-10.8	-20.5	-6.5	-3.4	0.0	-118.4	-84.0	-33.9
2002	0.0	0.0	0.0	0.0	0.0	-0.5	-18.9	-30.0	-61.5	-58.6	-47.1	-13.4	-6.9	0.0	-236.9	-149.5	-86.9
2003	0.0	0.0	0.0	0.0	0.0	-0.4	-21.4	-26.6	-60.9	-62.0	-21.9	-5.9	-3.0	0.0	-202.2	-150.2	-51.5
2004	0.0	0.0	0.0	0.0	0.0	-0.4	-20.4	-22.4	-62.1	-59.9	-22.6	-6.9	-4.2	0.0	-198.9	-144.8	-53.7
2005	0.0	0.0	0.0	0.0	0.0	-0.5	-16.6	-17.5	-62.0	-45.2	-25.1	-7.3	-4.2	0.0	-178.4	-126.2	-51.7
2006	0.0	0.0	0.0	0.0	0.0	-0.2	-5.4	-19.6	-13.5	-43.2	-32.9	-11.0	-3.1	0.0	-129.0	-67.4	-61.4
2007	0.0	0.0	0.0	0.0	0.0	-0.2	-13.3	-21.8	-57.5	-41.7	-34.4	-7.8	-3.9	0.0	-180.6	-120.5	-60.0
2008	0.0	0.0	0.0	0.0	0.0	-0.5	-20.1	-16.3	-47.2	-40.8	-48.2	-11.0	-9.7	0.0	-193.8	-110.8	-82.5
average	0	**0**	**0**	**0**	**0**	**0**	**-14**	**-22**	**-44**	**-40**	**-39**	**-13**	**-9**	**0**	**-180**	**-107**	**-73**

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30 Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5954	3892	5480	4997	5415	5067	5825	5337	5342	5784
1930	5324	6931	6940	5909	6512	6016	4071	5577	5826	4261	6666	6146	5322	5149	5840
1931	5384	7209	7179	5493	5210	5541	4096	4504	6156	5881	6472	6229	5294	4992	5804
1932	5014	6392	6938	4717	4707	7632	9994	7813	9138	8816	6179	6724	5897	5732	6708
1933	5420	6187	7670	9878	10074	9166	6840	5743	7166	10445	8087	7223	7192	5689	7761
1934	6178	9912	13203	14085	13427	11257	10828	8008	8115	7783	7026	5753	5382	5068	9232
1935	5516	5871	8108	9388	9485	9263	5678	5584	6784	6061	7410	7179	5760	5017	7078
1936	5240	6782	6991	6040	5801	6331	4702	7261	8969	7945	6255	6148	5157	4969	6415
1937	5210	7167	7105	6114	5428	5789	4127	4338	5815	4992	5982	6024	5194	4920	5702
1938	5418	6270	8548	8641	8425	9657	7516	7825	8038	7454	6737	5934	5244	5586	7333
1939	5482	6668	6812	7363	7376	7241	5728	6329	7368	5826	6251	5742	5163	5164	6416
1940	5680	7272	8589	7428	6282	10345	6347	5493	6542	5933	6225	5736	5007	4966	6722
1941	5563	6710	8274	6412	6482	6347	4288	5531	6222	5186	6480	5866	5032	5103	6097
1942	5439	7501	8674	8727	7818	7851	4470	5446	6201	6653	7557	6731	5836	6244	6991
1943	5522	6002	7834	9706	9983	9734	12217	10754	8139	9908	5569	6144	5633	5182	7893
1944	5007	6796	6854	6884	6599	5870	3684	5492	5087	3857	5603	5647	4952	4644	5591
1945	5431	6868	6982	5454	5910	5800	3701	3302	6759	7403	5160	6100	5357	5072	5839
1946	5140	6483	8422	8727	8773	8793	8573	8397	8598	7940	7262	7039	6245	5702	7574
1947	4993	6858	11241	11573	11266	10895	7016	5755	8009	8306	7510	6791	5587	5571	8222
1948	7754	8621	9630	11795	10123	8635	7096	7560	10818	12746	7732	7333	7297	6635	9092
1949	5407	6747	7923	8933	7794	10779	8128	7260	9276	7913	5335	5444	4808	4774	7309
1950	5236	6647	8074	11301	11163	11064	9644	6616	7899	10433	6527	7240	6835	5758	8254
1951	6061	8997	11389	13410	13333	12165	9532	7548	8261	7098	7670	7343	6979	5727	9133
1952	7181	7768	9621	11120	9794	9831	10334	9088	10894	8188	6923	6464	5420	4867	8487
1953	5043	6551	7048	8802	8165	8172	5974	5716	7659	10982	7295	6429	5869	5583	7267
1954	5295	7053	8874	10683	10624	9927	7023	5893	7977	9148	8463	7438	7386	8584	8362
1955	5439	7997	8525	7697	7177	6435	5208	5898	6670	9426	8558	7310	6703	5335	7151
1956	5556	8494	11270	13081	12791	11232	9607	10619	10990	10879	7721	7220	6669	5576	9544
1957	5528	6688	9001	9321	7476	9117	9852	5972	11342	11026	7187	6524	5408	5401	8003
1958	5283	6946	7458	9431	8819	9096	7314	6379	9811	8854	6684	5938	5600	5387	7527
1959	5401	7425	10676	12647	11972	10390	8311	6528	7367	10007	6872	7432	7389	8643	8832
1960	8817	9974	10648	10862	8650	8921	11647	7636	7133	7615	7296	6657	5426	5273	8406
1961	5407	6737	8214	9996	9985	9829	7867	6002	7932	10653	7371	6714	5903	5243	7871
1962	5183	6854	7493	9275	9040	6809	10259	8300	7764	8280	5398	6205	5429	5122	7175
1963	5714	7888	10227	10726	9100	8565	5341	5877	6475	6647	7181	6607	5718	5792	7504
1964	5131	6428	8088	8105	7485	6803	8086	5387	7454	12024	8128	7310	7083	6467	7499
1965	6174	7598	11453	14282	13488	11783	6340	8722	9172	8897	6982	7178	6603	5323	9114
1966	5606	7321	8590	9056	8277	6840	9770	6566	6609	7109	7524	7139	5689	5456	7240
1967	5225	6573	8419	11670	11375	10649	6136	4825	7031	10898	7468	7141	6384	5695	8086
1968	5403	7312	8582	10750	9605	9730	5483	5892	6034	8191	7559	7297	6494	7177	7740
1969	6360	8627	9663	12719	12869	10110	9905	8051	9687	7954	7538	6995	6304	5524	8869
1970	5278	7066	7371	9461	8957	8431	6666	5347	6845	9752	6150	5713	5164	5302	7157
1971	5161	6680	7683	12850	13453	12038	9228	7458	11190	11965	7840	7376	7290	6172	9201
1972	5575	6873	8805	12437	12961	12746	10916	6541	10271	12528	8153	7379	7344	6847	9429
1973	5555	7016	8335	9373	7810	6379	3451	5624	6002	5428	6074	5966	5001	5028	6416
1974	5377	6042	9805	14774	14456	12252	10572	8764	9787	11997	8157	7317	7306	6548	9654
1975	4991	6857	7720	8816	9746	9141	5601	5601	7609	11277	8234	7284	6507	6199	7743
1976	6412	8976	12577	12339	12264	11373	10456	7811	9848	7953	7838	7357	7302	9149	9593
1977	5650	6981	7010	6878	6916	6248	3689	5567	5594	4144	6097	5946	5092	4227	5823
1978	4832	5872	9304	9104	9174	8785	9855	6069	7568	6086	7150	6155	5386	6586	7341
1979	5785	7008	7541	8595	6335	8519	5394	6116	7856	5648	5528	5568	4976	5240	6599
1980	5320	6905	6475	7790	7233	6231	6797	7034	9602	8357	5825	6056	5111	5595	6814
1981	5462	6871	10615	11303	10292	9018	4232	6021	6984	10035	7664	7420	7311	6162	8068
1982	5278	7255	9130	10738	13112	12833	8911	6434	9122	10913	7019	7317	7296	7400	8955
1983	6257	7358	9478	11328	10873	12035	8486	5859	8262	8301	7674	7290	7200	6022	8495
1984	5398	9267	9426	10559	10539	9989	10758	7876	8312	11219	7396	7206	6212	6017	8664
1985	5379	7213	8412	8591	8105	7875	7475	6390	8117	6312	4960	5109	4663	5011	6810
1986	5906	8400	8458	9396	10334	13093	9395	7162	6839	8035	6710	6370	5330	5333	8038
1987	5067	6621	8571	8184	6217	8310	4841	5586	7058	7322	6044	5544	4850	4845	6562
1988	5268	6897	6444	5975	5454	6104	4022	5088	5880	5399	6916	6126	5366	4820	5793
1989	5146	6307	8210	6579	6367	7510	7471	7612	7418	6078	5468	5712	5084	5080	6427
1990	5229	7251	9006	9959	9839	9348	6390	8087	7422	8271	6813	7031	6164	5278	7676
1991	4853	9108	10030	11163	10769	9887	8069	6479	7565	7990	7874	7234	7114	5443	8249
1992	5039	6799	7232	7742	6326	8187	4267	5280	5905	5664	5877	5634	4968	4613	6127
1993	5414	6809	7458	6030	5299	6968	4239	5872	7191	6377	5992	5890	5164	5103	6111
1994	5156	7360	7375	6097	6439	5928	3842	5194	6899	7063	6326	5968	5170	5139	6154
1995	5191	6284	7526	6832	10055	10245	5657	5279	6055	8044	6232	5859	5219	5684	6909
1996	6488	10185	14141	14420	13243	13287	9610	9159	8833	10024	7981	7347	7224	5444	10056
1997	5191	7086	9402	14166	14378	13415	9980	9718	11848	12570	7999	7253	7216	7148	9997
1998	8063	8511	9183	8622	9172	7934	5264	6126	9947	9506	6815	7124	5986	5401	7946
1999	5152	6237	8880	12300	12279	12153	7859	6522	7836	10701	7890	7282	7243	6595	8688
2000	5450	9391	10217	9904	9501	9007	9334	8167	6659	6778	7288	6842	5012	5250	7835
2001	5227	6858	6957	6891	6601	6259	3650	5568	5403	3703	5954	5682	4949	4059	5654
2002	4716	6244	7770	6583	6876	6704	6476	7431	6318	8764	7791	6785	5699	5291	6683
2003	4946	7244	7101	6150	6405	9422	6688	6054	6589	8119	5522	5295	4747	4725	6466
2004	5513	7060	8829	6781	5971	8259	5752	5708	6492	6912	5467	5545	5060	6545	6575
2005	5504	6966	8883	8939	8404	7096	4364	5924	6972	7495	6201	6245	5204	5234	6874
2006	5331	6895	8209	10292	9815	9509	10998	8356	10711	8532	6601	6510	4965	4952	8011
2007	4768	7200	8322	10004	8010	10986	8403	6691	7230	7130	7422	6020	5052	4600	7399
2008	5529	6826	7707	7619	7486	7001	5741	4694	8978	10460	7071	6381	6128	5291	7120

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TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	5340	6836	6941	6763	6538	5972	4911	6728	7346	8015	5741	6381	5654	5342	6386
1930	5324	6931	6940	5909	6512	6034	5616	7554	7909	5422	7772	6761	5654	5149	6393
1931	5384	7209	7179	5493	5210	5559	5806	5298	8433	6843	7165	6847	5528	4992	6276
1932	5014	6392	6938	4717	4707	7650	11439	11322	12537	12346	7720	7830	6526	5732	7693
1933	5420	6187	7670	9878	10074	9184	8700	8180	10445	13112	10575	8686	8579	5689	8769
1934	6178	9912	13203	14085	13427	11257	12082	11509	11190	9726	8145	6327	5745	5068	9983
1935	5516	5871	8108	9388	9485	9281	7556	7551	9839	8764	9316	8621	6431	5017	7969
1936	5240	6782	6991	6040	5801	6350	6702	10727	11803	11058	7456	6908	5502	4969	7284
1937	5210	7167	7105	6114	5428	5808	5264	5212	8330	6715	6912	6706	5529	4920	6263
1938	5418	6270	8548	8641	8425	9656	9459	11449	11205	11055	8635	6770	5666	5586	8341
1939	5482	6668	6812	7363	7376	7259	7801	9021	10724	6981	7197	6337	5488	5164	7112
1940	5680	7272	8589	7428	6282	10343	8442	8086	9750	7562	7096	6379	5298	4966	7432
1941	5563	6710	8274	6412	6482	6365	5711	6620	8724	7250	7828	6614	5432	5103	6747
1942	5439	7501	8674	8727	7818	7870	6581	8613	9375	10015	9782	7825	6436	6244	8016
1943	5522	6002	7834	9706	9983	9733	11643	12333	11296	12351	8441	7568	6467	5182	8742
1944	5007	6796	6854	6884	6599	5889	4893	6788	6940	5265	6563	6245	5264	4644	6087
1945	5431	6868	6982	5454	5910	5818	4894	3728	10266	10978	6249	6947	5814	5072	6646
1946	5140	6483	8422	8727	8773	8811	10283	11961	11591	11251	9273	8401	7108	5702	8584
1947	4993	6858	11241	11573	11266	10903	8995	8684	11635	11925	9611	8006	6115	5571	9282
1948	7754	8621	9630	11795	10123	8653	9098	11107	12577	12746	10382	9045	8828	6635	9831
1949	5407	6747	7923	8933	7794	10778	9946	10880	11866	11420	6309	6080	5111	4774	8163
1950	5236	6647	8074	11301	11163	11048	11079	10143	11436	11857	9523	9220	8285	5758	9273
1951	6061	8997	11389	13410	13333	12165	10958	11167	11427	10665	10256	8958	8213	5727	10243
1952	7181	7768	9621	11120	9794	9831	11256	12018	12227	11819	9034	7596	5992	4867	9306
1953	5043	6551	7048	8802	8165	8190	7832	8053	11158	12896	9995	7603	6624	5583	8206
1954	5295	7053	8874	10683	10624	9935	9138	9162	11431	11913	11141	9452	9070	8584	9489
1955	5439	7997	8525	7697	7177	6453	7098	7832	9945	12650	11235	9034	7789	5335	8199
1956	5556	8494	11270	13081	12791	11215	10955	12041	11795	12577	10325	8972	7891	5576	10209
1957	5528	6688	9001	9321	7476	9116	11293	8981	12996	13660	9112	7647	5917	5401	8774
1958	5283	6946	7458	9431	8819	9097	9308	9888	11914	12234	8200	6761	6162	5387	8397
1959	5401	7425	10676	12647	11972	10390	10217	9044	10771	12483	9032	9022	8767	8643	9816
1960	8817	9974	10648	10862	8650	8939	12439	10862	10355	11182	9112	7787	5904	5273	9359
1961	5407	6737	8214	9996	9985	9838	9831	8116	11399	12776	8898	7654	6440	5243	8700
1962	5183	6854	7493	9275	9040	6827	11735	11656	11308	11964	6584	7223	5939	5122	8144
1963	5714	7888	10227	10726	9100	8583	7289	7854	9985	10203	9183	7625	6318	5792	8496
1964	5131	6428	8088	8105	7485	6822	9996	7819	11038	12829	10985	9011	8462	6467	8420
1965	6174	7598	11453	14282	13488	11776	8443	12137	11862	11987	9651	8975	8052	5323	10187
1966	5606	7321	8590	9056	8277	6858	11388	8871	9322	9495	9242	8348	6147	5456	8044
1967	5225	6573	8419	11670	11375	10649	7947	5981	10619	12210	10074	8594	7279	5695	8941
1968	5403	7312	8582	10750	9605	9738	7267	7172	8439	11835	9565	8756	7506	7177	8642
1969	6360	8627	9663	12719	12869	10106	11069	11071	11601	11503	9629	8147	7064	5524	9753
1970	5278	7066	7371	9461	8957	8430	8510	6687	10411	12515	8189	6426	5531	5302	8037
1971	5161	6680	7683	12850	13453	12023	10818	11032	12099	12486	10932	9280	8713	6172	9935
1972	5575	6873	8805	12437	12961	12746	11958	9945	12189	12528	10894	9305	8829	6847	10150
1973	5555	7016	8335	9373	7810	6398	4134	6725	8547	7127	7006	6585	5266	5028	6963
1974	5377	6042	9805	14774	14456	12252	10900	11003	11467	11997	11289	9201	8828	6548	10312
1975	4991	6857	7720	8816	9746	9144	7674	8082	10875	12735	11714	9139	7815	6199	8757
1976	6412	8976	12577	12339	12264	11369	11633	11483	12132	11654	10607	9675	9400	9149	10710
1977	5650	6981	7010	6878	6916	6267	4452	6578	6913	4513	6646	6438	5289	4227	6116
1978	4832	5872	9304	9104	9174	8803	11143	9165	11247	9583	9613	7107	5913	6586	8394
1979	5785	7008	7541	8595	6335	8528	7275	8274	11502	7758	6290	6022	5243	5240	7344
1980	5320	6905	6475	7790	7233	6250	8586	10148	12779	12012	7230	6805	5445	5595	7750
1981	5462	6871	10615	11303	10292	9018	5688	8016	10355	13349	9913	8886	8609	6162	9076
1982	5278	7255	9130	10738	13112	12833	10548	9962	11853	12588	10376	9160	8887	7400	9968
1983	6257	7358	9478	11328	10873	12020	10195	8865	11388	11608	10527	9116	8852	6022	9615
1984	5398	9267	9426	10559	10539	9989	11862	11490	11752	12986	10390	9112	7321	6017	9674
1985	5379	7213	8412	8591	8105	7893	9334	9942	11771	8949	5439	5495	4860	5011	7626
1986	5906	8400	8458	9396	10334	13093	10819	10730	10365	11729	8232	7248	5747	5333	9030
1987	5067	6621	8571	8184	6217	8328	6470	7338	9738	8969	6800	6010	5067	4845	7158
1988	5268	6897	6444	5975	5454	6123	5557	7334	8278	7052	8119	6764	5690	4820	6430
1989	5146	6307	8210	6579	6367	7529	9449	11221	10794	9011	6318	6308	5448	5080	7299
1990	5229	7251	9006	9959	9839	9366	8319	11576	10374	11469	8495	8280	7029	5278	8646
1991	4853	9108	10030	11163	10769	9906	9776	8580	10905	11346	10391	8873	8405	5443	9304
1992	5039	6799	7232	7742	6326	8205	5700	6525	8040	6571	6675	6087	5215	4613	6590
1993	5414	6809	7458	6030	5299	6987	6382	8116	10727	9807	7593	6959	5888	5103	7086
1994	5156	7360	7375	6097	6439	5946	5125	7152	9569	8665	7526	6514	5409	5139	6782
1995	5191	6284	7526	6832	10055	10237	7765	7442	9553	11691	8618	6996	5875	5684	7959
1996	6488	10185	14141	14420	13243	13287	10757	11933	11374	12647	10794	9037	8571	5444	11014
1997	5191	7086	9402	14166	14378	13415	11183	12273	12090	12934	10990	9204	8893	7148	10610
1998	8063	8511	9183	8622	9172	7952	7251	8452	12189	12784	9270	8795	6897	5401	8902
1999	5152	6237	8880	12300	12279	12154	9791	10037	11397	12895	10701	9290	8901	6595	9789
2000	5450	9391	10217	9904	9501	9025	11005	11792	10114	9612	9034	8035	5296	5250	8788
2001	5227	6858	6957	6891	6601	6277	4765	6761	7685	4077	6721	6188	5183	4059	6071
2002	4716	6244	7770	6583	6876	6722	8588	10798	9529	12139	10141	7929	6264	5291	7731
2003	4946	7244	7101	6150	6405	9440	8788	8670	9838	11714	6387	5775	4965	4725	7336
2004	5513	7060	8829	6781	5971	8277	7761	7911	9776	9905	6374	6100	5378	6545	7386
2005	5504	6966	8883	8939	8404	7115	5839	7484	10438	9819	7212	6879	5534	5234	7612
2006	5331	6895	8209	10292	9815	9518	11911	11650	12364	11777	8164	7496	5219	4952	8776
2007	4768	7200	8322	10004	8010	10995	9844	9067	10564	9173	8960	6685	5348	4600	8178
2008	5529	6826	7707	7619	7486	7020	7678	6262	12166	13324	9397	7375	6958	5291	8044

spill to 125 gas cap - actual spill

TABLE OF FEDERAL GENERATION - AVERAGE MEGAWATTS

(Without Hydro Independents

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	AVG.
1929	0	0	0	0	0	-18	-1019	-1248	-2349	-2600	-674	-556	-317	0	-602
1930	0	0	0	0	0	-18	-1545	-1977	-2083	-1161	-1106	-615	-332	0	-553
1931	0	0	0	0	0	-18	-1710	-794	-2277	-962	-693	-618	-234	0	-472
1932	0	0	0	0	0	-18	-1445	-3509	-3399	-3530	-1541	-1106	-629	0	-985
1933	0	0	0	0	0	-18	-1860	-2437	-3279	-2667	-2488	-1463	-1387	0	-1008
1934	0	0	0	0	0	0	-1254	-3501	-3075	-1943	-1119	-574	-363	0	-751
1935	0	0	0	0	0	-18	-1878	-1967	-3055	-2703	-1906	-1442	-671	0	-891
1936	0	0	0	0	0	-19	-2000	-3466	-2834	-3113	-1201	-760	-345	0	-869
1937	0	0	0	0	0	-19	-1137	-874	-2515	-1723	-930	-682	-335	0	-561
1938	0	0	0	0	0	1	-1943	-3624	-3167	-3601	-1898	-836	-422	0	-1008
1939	0	0	0	0	0	-18	-2073	-2692	-3356	-1155	-946	-595	-325	0	-696
1940	0	0	0	0	0	2	-2095	-2593	-3208	-1629	-871	-643	-291	0	-710
1941	0	0	0	0	0	-18	-1423	-1089	-2502	-2064	-1348	-748	-400	0	-650
1942	0	0	0	0	0	-19	-2111	-3167	-3174	-3362	-2225	-1094	-600	0	-1025
1943	0	0	0	0	0	1	574	-1579	-3157	-2443	-2872	-1424	-834	0	-849
1944	0	0	0	0	0	-19	-1209	-1296	-1853	-1408	-960	-598	-312	0	-496
1945	0	0	0	0	0	-18	-1193	-426	-3507	-3575	-1089	-847	-457	0	-807
1946	0	0	0	0	0	-18	-1710	-3564	-2993	-3311	-2011	-1362	-863	0	-1010
1947	0	0	0	0	0	-8	-1979	-2929	-3626	-3619	-2101	-1215	-528	0	-1060
1948	0	0	0	0	0	-18	-2002	-3547	-1759	0	-2650	-1712	-1531	0	-739
1949	0	0	0	0	0	1	-1818	-3620	-2590	-3507	-974	-636	-303	0	-854
1950	0	0	0	0	0	16	-1435	-3527	-3537	-1424	-2996	-1980	-1450	0	-1019
1951	0	0	0	0	0	0	-1426	-3619	-3166	-3567	-2586	-1615	-1234	0	-1110
1952	0	0	0	0	0	0	-922	-2930	-1333	-3631	-2111	-1132	-572	0	-819
1953	0	0	0	0	0	-18	-1858	-2337	-3499	-1914	-2700	-1174	-755	0	-939
1954	0	0	0	0	0	-8	-2115	-3269	-3454	-2765	-2678	-2014	-1684	0	-1127
1955	0	0	0	0	0	-18	-1890	-1934	-3275	-3224	-2677	-1724	-1086	0	-1048
1956	0	0	0	0	0	17	-1348	-1422	-805	-1698	-2604	-1752	-1222	0	-665
1957	0	0	0	0	0	1	-1441	-3009	-1654	-2634	-1925	-1123	-509	0	-771
1958	0	0	0	0	0	-1	-1994	-3509	-2103	-3380	-1516	-823	-562	0	-870
1959	0	0	0	0	0	0	-1906	-2516	-3404	-2476	-2160	-1590	-1378	0	-984
1960	0	0	0	0	0	-18	-792	-3226	-3222	-3567	-1816	-1130	-478	0	-953
1961	0	0	0	0	0	-9	-1964	-2114	-3467	-2123	-1527	-940	-537	0	-829
1962	0	0	0	0	0	-18	-1476	-3356	-3544	-3684	-1186	-1018	-510	0	-969
1963	0	0	0	0	0	-18	-1948	-1977	-3510	-3556	-2002	-1018	-600	0	-992
1964	0	0	0	0	0	-19	-1910	-2432	-3584	-805	-2857	-1701	-1379	0	-921
1965	0	0	0	0	0	7	-2103	-3415	-2690	-3090	-2669	-1797	-1449	0	-1073
1966	0	0	0	0	0	-18	-1618	-2305	-2713	-2386	-1718	-1209	-458	0	-804
1967	0	0	0	0	0	0	-1811	-1156	-3588	-1312	-2606	-1453	-895	0	-855
1968	0	0	0	0	0	-8	-1784	-1280	-2405	-3644	-2006	-1459	-1012	0	-902
1969	0	0	0	0	0	4	-1164	-3020	-1914	-3549	-2091	-1152	-760	0	-884
1970	0	0	0	0	0	1	-1844	-1340	-3566	-2763	-2039	-713	-367	0	-880
1971	0	0	0	0	0	15	-1590	-3574	-909	-521	-3092	-1904	-1423	0	-734
1972	0	0	0	0	0	0	-1042	-3404	-1918	0	-2741	-1926	-1485	0	-721
1973	0	0	0	0	0	-19	-683	-1101	-2545	-1699	-932	-619	-265	0	-547
1974	0	0	0	0	0	0	-328	-2239	-1680	0	-3132	-1884	-1522	0	-658
1975	0	0	0	0	0	-3	-2073	-2481	-3266	-1458	-3480	-1855	-1308	0	-1014
1976	0	0	0	0	0	4	-1177	-3672	-2284	-3701	-2769	-2318	-2098	0	-1117
1977	0	0	0	0	0	-19	-763	-1011	-1319	-369	-549	-492	-197	0	-293
1978	0	0	0	0	0	-18	-1288	-3096	-3679	-3497	-2463	-952	-527	0	-1053
1979	0	0	0	0	0	-9	-1881	-2158	-3646	-2110	-762	-454	-267	0	-745
1980	0	0	0	0	0	-19	-1789	-3114	-3177	-3655	-1405	-749	-334	0	-936
1981	0	0	0	0	0	0	-1456	-1995	-3371	-3314	-2249	-1466	-1298	0	-1008
1982	0	0	0	0	0	0	-1637	-3528	-2731	-1675	-3357	-1843	-1591	0	-1013
1983	0	0	0	0	0	15	-1709	-3006	-3126	-3307	-2853	-1826	-1652	0	-1120
1984	0	0	0	0	0	0	-1104	-3614	-3440	-1767	-2994	-1906	-1109	0	-1010
1985	0	0	0	0	0	-18	-1859	-3552	-3654	-2637	-479	-386	-197	0	-816
1986	0	0	0	0	0	0	-1424	-3568	-3526	-3694	-1522	-878	-417	0	-992
1987	0	0	0	0	0	-18	-1629	-1752	-2680	-1647	-756	-466	-217	0	-596
1988	0	0	0	0	0	-19	-1535	-2246	-2398	-1653	-1203	-638	-324	0	-637
1989	0	0	0	0	0	-19	-1978	-3609	-3376	-2933	-850	-596	-364	0	-872
1990	0	0	0	0	0	-18	-1929	-3489	-2952	-3198	-1682	-1249	-865	0	-970
1991	0	0	0	0	0	-19	-1707	-2101	-3340	-3356	-2517	-1639	-1291	0	-1055
1992	0	0	0	0	0	-18	-1433	-1245	-2135	-907	-798	-453	-247	0	-463
1993	0	0	0	0	0	-19	-2143	-2244	-3536	-3430	-1601	-1069	-724	0	-975
1994	0	0	0	0	0	-18	-1283	-1958	-2670	-1602	-1200	-546	-239	0	-628
1995	0	0	0	0	0	8	-2108	-2163	-3498	-3647	-2386	-1137	-656	0	-1050
1996	0	0	0	0	0	0	-1147	-2774	-2541	-2623	-2813	-1690	-1347	0	-958
1997	0	0	0	0	0	0	-1203	-2555	-242	-364	-2991	-1951	-1677	0	-613
1998	0	0	0	0	0	-18	-1987	-2326	-2242	-3278	-2455	-1671	-911	0	-956
1999	0	0	0	0	0	-1	-1932	-3515	-3561	-2194	-2811	-2008	-1658	0	-1101
2000	0	0	0	0	0	-18	-1671	-3625	-3455	-2834	-1746	-1193	-284	0	-953
2001	0	0	0	0	0	-18	-1115	-1193	-2282	-374	-767	-506	-234	0	-417
2002	0	0	0	0	0	-18	-2112	-3367	-3211	-3375	-2350	-1144	-565	0	-1048
2003	0	0	0	0	0	-18	-2100	-2616	-3249	-3595	-865	-480	-218	0	-870
2004	0	0	0	0	0	-18	-2009	-2203	-3284	-2993	-907	-555	-318	0	-811
2005	0	0	0	0	0	-19	-1475	-1560	-3466	-2324	-1011	-634	-330	0	-738
2006	0	0	0	0	0	-9	-913	-3294	-1653	-3245	-1563	-986	-254	0	-765
2007	0	0	0	0	0	-9	-1441	-2376	-3334	-2043	-1538	-665	-296	0	-779
2008	0	0	0	0	0	-19	-1937	-1568	-3188	-2864	-2326	-994	-830	0	-924
average	**0**	**0**	**0**	**0**	**0**	**-10**	**-1577**	**-2531**	**-2884**	**-2439**	**-1875**	**-1147**	**-749**	**0**	**-850**

AURORA prices BP-14 for FY15

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP
1929	30.75181	34.23604	39.45139	42.97467	41.25683	37.07969	31.33222	31.33222	28.23674	30.2606	35.46478	35.14374	35.14374	33.82268
1930	33.42876	35.75774	42.7901	46.50936	40.30447	37.08674	29.78637	29.78637	27.97655	34.07811	32.71478	35.98915	35.98915	34.22668
1931	32.82745	33.78221	39.55054	44.39722	45.5848	36.68957	31.20996	31.20996	27.09218	33.76793	35.1386	36.65696	36.65696	32.81585
1932	33.25904	36.03634	39.705	45.64384	43.33009	30.04855	22.06863	22.06863	17.36312	20.55622	30.00792	32.33232	32.33232	32.77855
1933	32.35709	35.94772	37.27436	37.99706	34.36411	32.28283	28.3151	28.3151	23.62759	20.20182	24.99949	29.48846	29.48846	32.72185
1934	29.90549	30.00558	29.37797	28.13875	27.91998	26.52605	22.47726	22.47726	22.16002	27.6921	32.28633	34.17266	34.17266	33.49118
1935	31.02389	34.02204	36.17942	34.84639	33.18074	29.15843	27.30133	27.30133	22.53742	26.31065	28.99493	32.17211	32.17211	33.90247
1936	33.50205	35.58534	41.11183	42.68296	42.48886	35.695	27.02621	27.02621	16.29151	22.13949	31.4203	34.63403	34.63403	34.0365
1937	30.43249	33.42689	38.34326	42.32741	43.13591	35.52727	30.40125	30.40125	25.13836	28.99528	31.87636	33.12079	33.12079	31.17045
1938	32.66379	33.83042	35.73118	34.45018	33.631	29.83257	20.35303	20.35303	16.49589	21.83597	28.7544	32.89759	32.89759	33.87457
1939	31.35635	35.36586	39.08847	37.46124	36.60646	34.30705	25.75278	25.75278	20.57761	29.74381	32.12608	34.71769	34.71769	34.13088
1940	31.78005	34.93923	35.98836	38.25015	38.66732	28.16049	26.49236	26.49236	23.31098	29.0911	32.38243	34.32023	34.32023	32.31058
1941	32.84688	34.50532	35.7166	39.73614	37.78362	35.07702	29.71195	29.71195	25.6684	29.98198	31.29955	34.73357	34.73357	35.48733
1942	30.63465	33.34307	34.57568	35.76756	34.2336	31.69215	26.5683	26.5683	23.8223	25.25861	27.39548	32.25463	32.25463	31.81147
1943	32.59499	34.2083	35.51629	33.3402	30.94239	28.516	14.47933	14.47933	14.34864	15.89028	27.91211	31.72477	31.72477	32.75316
1944	31.21111	33.32826	38.7721	40.01851	38.72558	36.52921	31.1922	31.1922	29.78223	34.51153	34.89175	37.01391	37.01391	35.67071
1945	32.20318	35.43297	40.37459	40.63209	37.48872	34.56686	31.01065	31.01065	21.12246	22.47795	32.78839	33.40721	33.40721	31.50761
1946	31.38094	33.70233	34.43684	34.17642	32.68844	28.61502	18.84044	18.84044	15.43203	19.57603	26.18346	29.13743	29.13743	31.11408
1947	30.8356	31.85811	29.99728	30.38026	28.14902	25.39472	23.92308	23.92308	19.04286	21.55359	28.12851	32.71081	32.71081	33.60423
1948	28.46324	31.26196	34.73621	31.47378	33.0061	31.54032	23.48684	23.48684	14.41897	16.77699	25.77757	28.99989	28.99989	32.29799
1949	30.55261	33.02078	36.59523	35.87624	35.65972	27.51833	21.81884	21.81884	15.83049	21.19428	32.58709	34.42612	34.42612	33.4222
1950	29.86768	33.06276	35.31443	31.90985	30.16708	26.05313	21.47021	21.47021	18.73971	19.06685	26.47573	28.66778	28.66778	32.99996
1951	30.09596	30.13658	30.93034	27.67327	24.32806	23.30172	20.36062	20.36062	17.84146	23.04038	26.73768	30.40858	30.40858	33.08911
1952	28.38423	31.6597	32.97124	31.53348	30.92465	30.06633	19.27852	19.27852	13.42246	20.04773	28.69778	32.37459	32.37459	32.84681
1953	33.6602	36.1884	39.56055	35.08372	34.22077	32.24644	27.34767	27.34767	19.41391	17.48687	26.56144	32.71655	32.71655	32.63949
1954	32.02351	31.93984	33.47387	31.62094	30.83143	28.44516	25.18905	25.18905	19.30918	20.28588	23.44698	28.06628	28.06628	27.70956
1955	31.33632	31.76372	34.73088	38.05533	37.14872	33.29458	27.86196	27.86196	23.23965	18.52172	22.89957	29.37539	29.37539	32.81233
1956	30.86224	30.68236	31.01207	25.25872	27.14546	24.40925	19.20958	19.20958	15.36208	15.957	25.48983	28.6636	28.6636	32.87755
1957	30.10438	33.97066	34.59903	35.97444	34.33053	29.89369	22.63408	22.63408	15.48112	18.5918	28.6751	31.91579	31.91579	32.60255
1958	32.1463	36.05567	39.52241	34.42329	33.92756	28.73769	23.75537	23.75537	14.52348	19.42669	29.30149	32.48594	32.48594	33.07427
1959	31.52091	31.05884	31.5407	29.01596	27.67721	26.84779	22.95482	22.95482	19.57964	18.29306	25.59881	27.54367	27.54367	25.74231
1960	25.31547	27.88676	30.12788	31.99815	34.01543	31.45532	20.60274	20.60274	21.52904	23.73974	29.67389	33.93777	33.93777	34.14745
1961	32.05129	33.1226	36.32303	33.53782	32.75337	28.27263	26.39533	26.39533	20.99704	21.29166	29.85862	32.79606	32.79606	34.37604
1962	32.13387	34.27386	37.98043	36.41163	36.63283	36.74128	19.36912	19.36912	18.95678	22.52174	34.20744	35.08982	35.08982	34.19511
1963	30.16725	32.67363	33.76512	33.36323	30.97239	30.76069	27.49639	27.49639	21.85043	24.86034	29.03636	32.35038	32.35038	31.31923
1964	33.7969	34.174	36.56315	36.34551	36.70895	34.42112	26.29765	26.29765	22.56974	18.41046	25.26643	30.07193	30.07193	31.82094
1965	31.2897	32.65482	30.84017	25.79736	24.89646	24.12779	23.3361	23.3361	18.1152	24.27316	29.14537	29.89417	29.89417	34.1263
1966	32.61498	32.82404	34.69954	34.89881	35.20599	34.58327	23.40771	23.40771	24.44178	26.88161	30.08959	33.45133	33.45133	33.36892
1967	33.77317	35.84591	36.7111	31.63135	29.90058	27.14026	29.35542	29.35542	19.34026	15.97176	26.13757	32.05356	32.05356	34.96025
1968	29.21021	31.76163	35.23611	32.41795	31.03175	25.86531	28.50806	28.50806	24.64149	20.57448	27.18193	30.79959	30.79959	30.26115
1969	28.58933	28.27431	31.11925	28.12343	27.13178	27.2444	16.90694	16.90694	9.764471	17.58143	25.5428	28.57408	28.57408	30.71354
1970	29.80468	31.90592	33.96833	30.84848	28.96992	28.2805	26.22243	26.22243	18.94977	18.40837	29.46238	32.31925	32.31925	32.3041
1971	30.61243	31.90747	33.72827	25.93631	21.53083	20.50993	17.80665	17.80665	10.76719	13.27961	22.11033	27.11317	27.11317	30.32367
1972	28.90223	32.64726	35.28833	27.01097	26.5195	16.41519	18.1983	18.1983	13.35313	14.303	23.65583	26.48229	26.48229	29.36452
1973	28.89071	30.54748	31.5716	31.02657	32.26076	31.79654	29.85416	29.85416	23.9807	28.22483	31.38369	33.17691	33.17691	33.01029
1974	30.41876	31.81876	31.12249	17.92916	17.97309	16.01921	12.83038	12.83038	9.642419	12.71029	20.64916	24.62732	24.62732	29.5256
1975	30.04784	31.03289	32.64147	29.58213	27.78427	24.56198	26.03151	26.03151	11.81653	17.02898	24.4492	31.74135	31.74135	33.48481
1976	27.69103	27.86807	27.20391	29.16126	28.57416	25.57859	21.94144	21.94144	16.77813	22.17628	26.00984	28.62725	28.62725	28.06756
1977	30.00544	33.46965	37.16918	40.84162	39.35788	36.64888	31.23424	31.23424	30.02061	36.37549	33.77585	35.1493	35.1493	33.80567
1978	31.42	33.54737	31.60077	31.84438	30.38125	29.77634	21.60566	21.60566	19.05098	25.32625	27.78843	32.05651	32.05651	31.48921
1979	32.35285	33.10471	35.31571	35.4571	36.71159	31.83924	28.89267	28.89267	20.10913	28.07096	31.96114	34.14962	34.14962	33.0972
1980	31.86089	35.18021	39.86183	35.9838	35.59791	34.70304	24.72941	24.72941	17.73405	22.91252	31.27806	34.50926	34.50926	33.12677
1981	31.16236	36.13392	32.2597	32.08473	29.97282	30.09378	28.59467	28.59467	23.13778	21.47496	27.75676	31.19194	31.19194	33.21797
1982	31.00272	33.1865	33.94873	28.59641	25.14928	19.11817	21.46963	21.46963	16.54488	20.81286	26.27697	28.21561	28.21561	29.58903
1983	30.05918	32.1529	32.53641	29.25551	29.81639	23.19218	23.91539	23.91539	18.22169	20.88494	24.79438	28.66629	28.66629	31.12661
1984	30.93471	28.73609	32.26009	30.85046	30.62574	28.94928	21.34826	21.34826	20.52545	19.78595	27.01666	29.84861	29.84861	32.34377
1985	31.35108	33.01897	34.27124	36.47875	37.47142	31.33873	24.34408	24.34408	20.19651	27.60379	35.84407	37.07739	37.07739	36.53039
1986	28.5968	29.1983	35.60248	32.69155	32.93805	17.56042	21.51585	21.51585	22.79262	24.605	31.88174	34.31427	34.31427	33.27187
1987	33.50806	33.86733	33.72572	35.42946	35.20818	31.12977	28.36595	28.36595	24.9179	29.45736	33.99259	36.46311	36.46311	34.95393
1988	30.05449	32.36502	39.49968	40.44596	42.4548	35.09377	28.3615	28.3615	26.26123	30.04643	30.17838	34.07658	34.07658	34.9256
1989	34.34816	36.36863	38.63464	39.8665	40.07993	32.96674	23.00481	23.00481	23.1057	27.62766	34.25927	36.01981	36.01981	35.90586
1990	34.62241	33.64275	34.78702	34.70529	33.64001	31.41636	25.12228	25.12228	23.33611	24.35727	29.29557	31.4983	31.4983	33.66436
1991	32.23012	29.70158	32.79025	31.98384	29.7777	29.0558	25.58008	25.58008	22.85616	25.01891	26.55837	30.00329	30.00329	32.95193
1992	31.92624	34.12769	37.5359	37.17651	35.43381	33.45278	29.58219	29.58219	26.63396	32.27755	34.08941	35.61657	35.61657	34.57094
1993	31.87222	34.28876	36.29081	40.43844	41.14174	32.26994	28.21034	28.21034	22.218	26.19392	32.69254	36.14877	36.14877	36.69262
1994	34.07621	34.03729	38.18117	41.04819	37.88766	36.29908	30.35301	30.35301	25.79305	29.85726	32.11184	34.29376	34.29376	32.71102
1995	34.29495	35.40404	36.00744	38.22912	33.02346	27.48561	27.80637	27.80637	23.47746	21.07731	28.75259	32.03782	32.03782	32.40076
1996	29.4774	29.02838	27.83466	24.98471	21.76367	18.13853	16.69077	16.69077	13.66334	18.81979	24.30066	28.8395	28.8395	33.49015
1997	31.83349	32.65191	33.08791	23.92659	22.55329	17.95449	19.54089	19.54089	18.50954	19.60584	24.85613	29.96531	29.96531	31.95195
1998	26.34727	29.59946	32.02359	31.72941	32.92609	30.16257	25.63855	25.63855	16.48526	19.17908	26.91872	29.53538	29.53538	32.92869
1999	32.00281	35.29836	34.9133	29.23575	27.57885	22.68125	22.6293	22.6293	18.23172	18.166	23.58775	26.25491	26.25491	29.65874
2000	30.68793	28.95521	31.71788	32.18074	31.34374	29.28761	19.78975	19.78975	20.44024	24.1002	28.51728	32.63895	32.63895	33.82627
2001	33.15118	33.71315	40.52999	42.45002	38.78903	36.92032	31.66392	31.66392	29.316	39.15644	35.81753	37.28979	37.28979	36.24463
2002	34.85202	36.92068	37.61898	38.10373	36.94631	34.52835	24.70066	24.70066	25.61314	24.09442	26.94263	33.22622	33.22622	34.79303
2003	33.48458	35.21957	39.67213	39.78274	41.08466	32.23026	28.14287	28.14287	25.05703	23.92164	34.00188	35.9727	35.9727	34.97931
2004	31.3873	33.28601	34.7507	36.49424	38.6384	32.58414	28.04896	28.04896	25.2684	27.74489	33.3486	36.33232	36.33232	34.41061
2005	33.03474	33.94366	34.00107	35.90741	35.45388	35.55046	30.93461	30.93461	23.91907	26.93271	33.27974	33.27382	33.27382	32.69276
2006	31.92043	34.15706	33.66985	31.21171	28.97647	28.57869	16.55544	16.55544	10.98553	18.47821	28.29506	31.77696	31.77696	31.66015
2007	34.33022	33.16935	36.79715	33.70093	35.84061	27.2109	25.38446	25.38446	23.07116	28.20457	30.03075	33.97331	33.97331	34.33323
2008	32.00268	35.09606	35.8432	36.59465	36.61519	34.48192	28.66558	28.66558	19.88198	19.76955	27.81849	31.53522	31.53522	34.98228
							average	**[illegible]**	**[illegible]**	**23.33487**	**29.11119**	**32.21662**		

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	15-Apr	30-Apr	MAY	JUNE	JULY	15-Aug	31-Aug	SEP	Total	spring	summer
1929	0.0	0.0	0.0	0.0	0.0	-0.5	-11.5	-14.1	-49.3	-56.6	-17.8	-7.0	-4.3	0.0	-161.2	-112.7	-48.0
1930	0.0	0.0	0.0	0.0	0.0	-0.5	-16.6	-21.2	-43.4	-28.5	-26.9	-8.0	-4.6	0.0	-149.6	-100.1	-49.0
1931	0.0	0.0	0.0	0.0	0.0	-0.5	-19.2	-8.9	-45.9	-23.4	-18.1	-8.2	-3.3	0.0	-127.5	-89.6	-37.4
1932	0.0	0.0	0.0	0.0	0.0	-0.4	-11.5	-27.9	-43.9	-52.2	-34.4	-12.9	-7.8	0.0	-191.0	-118.1	-72.5
1933	0.0	0.0	0.0	0.0	0.0	-0.4	-19.0	-24.8	-57.6	-38.8	-46.3	-15.5	-15.7	0.0	-218.2	-127.3	-90.4
1934	0.0	0.0	0.0	0.0	0.0	0.0	-10.1	-28.3	-50.7	-38.7	-26.9	-7.1	-4.8	0.0	-166.6	-115.0	-51.6
1935	0.0	0.0	0.0	0.0	0.0	-0.4	-18.5	-19.3	-51.2	-51.2	-41.1	-16.7	-8.3	0.0	-206.7	-123.2	-83.2
1936	0.0	0.0	0.0	0.0	0.0	-0.5	-19.5	-33.7	-34.4	-49.6	-28.1	-9.5	-4.6	0.0	-179.8	-120.6	-58.7
1937	0.0	0.0	0.0	0.0	0.0	-0.5	-12.4	-9.6	-47.0	-36.0	-22.1	-8.1	-4.3	0.0	-140.0	-93.0	-46.4
1938	0.0	0.0	0.0	0.0	0.0	0.0	-14.2	-26.6	-38.9	-56.6	-40.6	-9.9	-5.3	0.0	-192.1	-117.4	-74.7
1939	0.0	0.0	0.0	0.0	0.0	-0.5	-19.2	-25.0	-51.4	-24.7	-22.6	-7.4	-4.3	0.0	-155.1	-112.0	-42.6
1940	0.0	0.0	0.0	0.0	0.0	0.0	-20.0	-24.7	-55.6	-34.1	-21.0	-7.9	-3.8	0.0	-167.2	-123.1	-44.1
1941	0.0	0.0	0.0	0.0	0.0	-0.5	-15.2	-11.6	-47.8	-44.6	-31.4	-9.4	-5.3	0.0	-165.8	-104.4	-60.9
1942	0.0	0.0	0.0	0.0	0.0	-0.4	-20.2	-30.3	-56.3	-61.1	-45.4	-12.7	-7.4	0.0	-233.8	-147.5	-85.9
1943	0.0	0.0	0.0	0.0	0.0	0.0	3.0	-8.2	-33.7	-28.0	-59.6	-16.3	-10.2	0.0	-152.9	-57.6	-95.4
1944	0.0	0.0	0.0	0.0	0.0	-0.5	-13.6	-14.6	-41.1	-35.0	-24.9	-8.0	-4.4	0.0	-142.0	-92.5	-49.0
1945	0.0	0.0	0.0	0.0	0.0	-0.5	-13.3	-4.8	-55.1	-57.9	-26.6	-10.2	-5.9	0.0	-174.1	-111.8	-61.9
1946	0.0	0.0	0.0	0.0	0.0	-0.4	-11.6	-24.2	-34.4	-46.7	-39.2	-14.3	-9.7	0.0	-180.3	-101.2	-78.7
1947	0.0	0.0	0.0	0.0	0.0	-0.2	-17.0	-25.2	-51.4	-56.2	-44.0	-14.3	-6.6	0.0	-214.9	-131.1	-83.6
1948	0.0	0.0	0.0	0.0	0.0	-0.4	-16.9	-30.0	-18.9	0.0	-50.8	-17.9	-17.0	0.0	-152.0	-65.8	-85.7
1949	0.0	0.0	0.0	0.0	0.0	0.0	-14.3	-28.4	-30.5	-53.5	-23.6	-7.9	-4.0	0.0	-162.2	-108.9	-53.3
1950	0.0	0.0	0.0	0.0	0.0	0.3	-11.1	-27.3	-49.3	-19.5	-59.0	-20.4	-16.0	0.0	-202.3	-100.7	-101.9
1951	0.0	0.0	0.0	0.0	0.0	0.0	-10.5	-26.5	-42.0	-59.2	-51.4	-17.7	-14.4	0.0	-221.7	-118.5	-103.3
1952	0.0	0.0	0.0	0.0	0.0	0.0	-6.4	-20.3	-13.3	-52.4	-45.1	-13.2	-7.1	0.0	-157.8	-75.0	-82.8
1953	0.0	0.0	0.0	0.0	0.0	-0.4	-18.3	-23.0	-50.5	-24.1	-53.4	-13.8	-9.5	0.0	-193.0	-107.9	-84.7
1954	0.0	0.0	0.0	0.0	0.0	-0.2	-19.2	-29.6	-49.6	-40.4	-46.7	-20.3	-18.1	0.0	-224.2	-125.4	-98.7
1955	0.0	0.0	0.0	0.0	0.0	-0.4	-19.0	-19.4	-56.6	-43.0	-45.6	-18.2	-12.3	0.0	-214.5	-123.6	-90.4
1956	0.0	0.0	0.0	0.0	0.0	0.3	-9.3	-9.8	-9.2	-19.5	-49.4	-18.1	-13.5	0.0	-128.5	-41.4	-87.4
1957	0.0	0.0	0.0	0.0	0.0	0.0	-11.7	-24.5	-19.1	-35.3	-41.1	-12.9	-6.2	0.0	-150.8	-78.8	-72.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	-17.1	-30.0	-22.7	-47.3	-33.0	-9.6	-7.0	0.0	-166.8	-101.3	-65.4
1959	0.0	0.0	0.0	0.0	0.0	0.0	-15.8	-20.8	-49.6	-32.6	-41.1	-15.8	-14.6	0.0	-190.2	-107.9	-82.3
1960	0.0	0.0	0.0	0.0	0.0	-0.4	-5.9	-23.9	-51.6	-61.0	-40.1	-13.8	-6.2	0.0	-202.9	-122.1	-80.5
1961	0.0	0.0	0.0	0.0	0.0	-0.2	-18.7	-20.1	-54.2	-32.5	-33.9	-11.1	-6.8	0.0	-177.4	-114.6	-62.6
1962	0.0	0.0	0.0	0.0	0.0	-0.5	-10.3	-23.4	-50.0	-59.7	-30.2	-12.9	-6.9	0.0	-193.8	-123.5	-69.8
1963	0.0	0.0	0.0	0.0	0.0	-0.4	-19.3	-19.6	-57.1	-63.7	-43.2	-11.9	-7.5	0.0	-222.5	-138.3	-83.8
1964	0.0	0.0	0.0	0.0	0.0	-0.5	-18.1	-23.0	-60.2	-10.7	-53.7	-18.4	-15.9	0.0	-200.5	-108.4	-91.6
1965	0.0	0.0	0.0	0.0	0.0	0.1	-17.7	-28.7	-36.3	-54.0	-57.9	-19.3	-16.6	0.0	-230.3	-118.6	-111.8
1966	0.0	0.0	0.0	0.0	0.0	-0.5	-13.6	-19.4	-49.3	-46.2	-38.5	-14.6	-5.9	0.0	-187.9	-113.2	-74.3
1967	0.0	0.0	0.0	0.0	0.0	0.0	-19.1	-12.2	-51.6	-15.1	-50.7	-16.8	-11.0	0.0	-176.5	-93.0	-83.5
1968	0.0	0.0	0.0	0.0	0.0	-0.2	-18.3	-13.1	-44.1	-54.0	-40.6	-16.2	-12.0	0.0	-198.4	-111.5	-86.7
1969	0.0	0.0	0.0	0.0	0.0	0.1	-7.1	-18.4	-13.9	-44.9	-39.7	-11.9	-8.3	0.0	-144.1	-69.3	-74.9
1970	0.0	0.0	0.0	0.0	0.0	0.0	-17.4	-12.6	-50.3	-36.6	-44.7	-8.3	-4.6	0.0	-174.5	-104.7	-69.8
1971	0.0	0.0	0.0	0.0	0.0	0.2	-10.2	-22.9	-7.3	-5.0	-50.9	-18.6	-14.8	0.0	-129.4	-43.7	-85.9
1972	0.0	0.0	0.0	0.0	0.0	0.0	-6.8	-22.3	-19.1	0.0	-48.2	-18.4	-15.1	0.0	-129.9	-48.2	-81.7
1973	0.0	0.0	0.0	0.0	0.0	-0.4	-7.3	-11.8	-45.4	-34.5	-21.8	-7.4	-3.4	0.0	-132.1	-87.6	-44.0
1974	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-10.3	-12.1	0.0	-48.1	-16.7	-14.4	0.0	-103.1	-23.9	-79.2
1975	0.0	0.0	0.0	0.0	0.0	-0.1	-19.4	-23.3	-28.7	-17.9	-63.3	-21.2	-15.9	0.0	-189.8	-83.3	-106.4
1976	0.0	0.0	0.0	0.0	0.0	0.1	-9.3	-29.0	-28.5	-59.1	-53.6	-23.9	-23.1	0.0	-226.4	-106.2	-120.2
1977	0.0	0.0	0.0	0.0	0.0	-0.5	-8.6	-11.4	-29.5	-9.7	-13.8	-6.2	-2.7	0.0	-82.3	-55.9	-25.9
1978	0.0	0.0	0.0	0.0	0.0	-0.4	-10.0	-24.1	-52.1	-63.8	-50.9	-11.0	-6.5	0.0	-218.8	-128.8	-89.7
1979	0.0	0.0	0.0	0.0	0.0	-0.2	-19.6	-22.4	-54.5	-42.6	-18.1	-5.6	-3.5	0.0	-166.6	-125.0	-41.4
1980	0.0	0.0	0.0	0.0	0.0	-0.5	-15.9	-27.7	-41.9	-60.3	-32.7	-9.3	-4.4	0.0	-192.8	-125.8	-66.5
1981	0.0	0.0	0.0	0.0	0.0	0.0	-15.0	-20.5	-58.0	-51.2	-46.4	-16.5	-15.5	0.0	-223.2	-127.7	-95.5
1982	0.0	0.0	0.0	0.0	0.0	0.0	-12.7	-27.3	-33.6	-25.1	-65.6	-18.7	-17.2	0.0	-200.2	-90.3	-110.0
1983	0.0	0.0	0.0	0.0	0.0	0.3	-14.7	-25.9	-42.4	-49.7	-52.6	-18.8	-18.2	0.0	-222.1	-116.1	-106.2
1984	0.0	0.0	0.0	0.0	0.0	0.0	-8.5	-27.8	-52.5	-25.2	-60.2	-20.5	-12.7	0.0	-207.3	-105.6	-101.8
1985	0.0	0.0	0.0	0.0	0.0	-0.4	-16.3	-31.1	-54.9	-52.4	-12.8	-5.2	-2.8	0.0	-175.9	-137.3	-38.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	-11.0	-27.6	-59.8	-65.4	-36.1	-10.8	-5.5	0.0	-216.3	-142.1	-74.3
1987	0.0	0.0	0.0	0.0	0.0	-0.4	-16.6	-17.9	-49.7	-34.9	-19.1	-6.1	-3.0	0.0	-147.8	-107.5	-39.9
1988	0.0	0.0	0.0	0.0	0.0	-0.5	-15.7	-22.9	-46.9	-35.8	-27.0	-7.8	-4.2	0.0	-160.8	-109.3	-51.0
1989	0.0	0.0	0.0	0.0	0.0	-0.5	-16.4	-29.9	-58.0	-58.3	-21.7	-7.7	-5.0	0.0	-197.5	-143.2	-53.9
1990	0.0	0.0	0.0	0.0	0.0	-0.4	-17.4	-31.6	-51.3	-56.1	-36.7	-14.2	-10.5	0.0	-218.0	-137.6	-80.0
1991	0.0	0.0	0.0	0.0	0.0	-0.4	-15.7	-19.3	-56.8	-60.5	-49.7	-17.7	-14.9	0.0	-235.0	-132.2	-102.5
1992	0.0	0.0	0.0	0.0	0.0	-0.4	-15.3	-13.3	-42.3	-21.1	-20.2	-5.8	-3.4	0.0	-121.8	-84.9	-36.5
1993	0.0	0.0	0.0	0.0	0.0	-0.5	-21.8	-22.8	-58.5	-64.7	-38.9	-13.9	-10.0	0.0	-231.1	-146.1	-84.5
1994	0.0	0.0	0.0	0.0	0.0	-0.5	-14.0	-21.4	-51.2	-34.4	-28.7	-6.7	-3.1	0.0	-160.1	-109.6	-50.0
1995	0.0	0.0	0.0	0.0	0.0	0.2	-21.1	-21.7	-61.1	-55.3	-51.0	-13.1	-8.1	0.0	-231.3	-140.8	-90.7
1996	0.0	0.0	0.0	0.0	0.0	0.0	-6.9	-16.7	-25.8	-35.5	-50.9	-17.5	-14.9	0.0	-168.3	-73.1	-95.2
1997	0.0	0.0	0.0	0.0	0.0	0.0	-8.5	-18.0	-3.3	-5.1	-55.3	-21.0	-19.3	0.0	-130.6	-33.2	-97.4
1998	0.0	0.0	0.0	0.0	0.0	-0.4	-18.3	-21.5	-27.5	-45.3	-49.2	-17.8	-10.3	0.0	-190.2	-97.5	-92.4
1999	0.0	0.0	0.0	0.0	0.0	0.0	-15.7	-28.6	-48.3	-28.7	-49.3	-19.0	-16.7	0.0	-206.4	-111.8	-94.6
2000	0.0	0.0	0.0	0.0	0.0	-0.4	-11.9	-25.8	-52.5	-49.2	-37.0	-14.0	-3.6	0.0	-194.5	-123.1	-71.0
2001	0.0	0.0	0.0	0.0	0.0	-0.5	-12.7	-13.6	-49.8	-10.5	-20.4	-6.8	-3.4	0.0	-117.7	-83.1	-34.1
2002	0.0	0.0	0.0	0.0	0.0	-0.5	-18.8	-29.9	-61.2	-58.5	-47.1	-13.7	-7.2	0.0	-236.9	-148.9	-87.5
2003	0.0	0.0	0.0	0.0	0.0	-0.4	-21.3	-26.5	-60.6	-61.9	-21.9	-6.2	-3.0	0.0	-201.8	-149.6	-51.7
2004	0.0	0.0	0.0	0.0	0.0	-0.4	-20.3	-22.2	-61.7	-59.8	-22.5	-7.3	-4.4	0.0	-198.7	-144.1	-54.1
2005	0.0	0.0	0.0	0.0	0.0	-0.5	-16.4	-17.4	-61.7	-45.1	-25.0	-7.6	-4.2	0.0	-177.9	-125.5	-51.9
2006	0.0	0.0	0.0	0.0	0.0	-0.2	-5.4	-19.6	-13.5	-43.2	-32.9	-11.3	-3.1	0.0	-129.2	-67.4	-61.7
2007	0.0	0.0	0.0	0.0	0.0	-0.2	-13.2	-21.7	-57.2	-41.5	-34.4	-8.1	-3.9	0.0	-180.1	-119.8	-60.2
2008	0.0	0.0	0.0	0.0	0.0	-0.5	-20.0	-16.2	-47.2	-40.8	-48.1	-11.3	-10.1	0.0	-194.1	-110.5	-83.1
average	**0**	**0**	**0**	**0**	**0**	**0**	**-14**	**-22**	**-44**	**-40**	**-39**	**-13**	**-9**	**0**	**-180**	**-106**	**-74**

Gas/Spill Caps at mainstem projects based on Actual 2012 Spill Priority Lists

spill cost estimates.xlsx

Spring (Apr-Jun)	120%/115% TDG	Summer (Jul-Aug)	120%/115% TDG
LWG	41 KCFS	LWG	25 KCFS
IHR	90 KCFS	IHR	94 KCFS
TDA	110 KCFS	LGS	35 KCFS
BON	95 KCFS	BON	120 KCFS
LGS	35 KCFS	MCN	155 KCFS
LMN	25 KCFS	JDA	150 KCFS
MCN	150 KCFS	TDA	125 KCFS
JDA	140 KCFS	LMN	26 KCFS

Spring (Apr-Jun)	125% TDG	Summer (Jul-Aug)	125% TDG
LWG	63 KCFS	LWG	70 KCFS
IHR	110 KCFS	IHR	110 KCFS
TDA	270 KCFS	LGS	82 KCFS
BON	200 KCFS	BON	170 KCFS
LGS	82 KCFS	MCN	299 KCFS
LMN	80 KCFS	JDA	195 KCFS
MCN	230 KCFS	TDA	269 KCFS
JDA	190 KCFS	LMN	80 KCFS

16-Apr

LEVEL 1 SPILL FISH
ALL READY SPILLING LEVELS

1)	LWG	FISH	41	KCFS
2)	LGS	FISH	40	KCFS
3)	LMN	FISH	26	KCFS
4)	BON	FISH	95	KCFS
5)	JDA	FISH	146	KCFS
6)	IHR	FISH	92	KCFS
7)	MCN	FISH	165	KCFS
8)	TDA	FISH	110	KCFS

**AS MEASURE IN THE TAILWATE AND FOREBAY
DOWNSTF RESPECTIVELY

LEVEL 2 SPILL IS AS FOLLOWS:

9)	LWG	120%	45	KCFS
10)	LGS	120%	52	KCFS
11)	LMN	120%	44	KCFS
12)	BON	120%	100	KCFS
13)	JDA	120%	146	KCFS
14)	IHR	120%	75	KCFS
15)	MCN	120%	165	KCFS
16)	TDA	120%	135	KCFS
17)	DWR	110%	35%	TOTAL
18)	CHJ	120%	100	KCFS
(IF	SPILL	EXPECTED		
19)	CHJ	115%	60	KCFS
(IF	SPILL	EXPECTED		

4 SPILL IS AS FOLLOWS:

30)	BON	125%	215	KCFS
31)	LWG	125%	63	KCFS
32)	LGS	125%	70	KCFS
33)	LMN	125%	80	KCFS
34)	JDA	125%	190	KCFS
35)	IHR	125%	110	KCFS
36)	MCN	125%	230	KCFS
37)	TDA	125%	269	KCFS
38)	CHJ	125%	190	KCFS
39)	GCL	115%	25	KCFS

THROUGH OUTLET TUBES.

29-Apr

spill cost estimates.xlsx

LEVEL 1 SPILL FISH
ALL READY SPILLING LEVELS

1)	LWG	FISH	45	KCFS
2)	IHR	FISH	85	KCFS
3)	TDA	FISH	98	KCFS
4)	BON	FISH	95	KCFS
5)	LGS	FISH	40	KCFS
6)	LMN	FISH	24	KCFS
7)	MCN	FISH	165	KCFS
8)	JDA	FISH	146	KCFS
9)	CHJ	110%	22	KCFS

**AS MEASURE IN THE TAILWATE AND
DOWNSTF RESPECTIVELY.

LEVEL 2 SPILL IS AS FOLLOWS

10)	LWG	120%	45	KCFS
11)	IHR	120%	85	KCFS
12)	TDA	120%	180	KCFS
13)	BON	120%	100	KCFS
14)	LGS	120%	52	KCFS
15)	LMN	120%	55	KCFS
16)	MCN	120%	185	KCFS
17)	JDA	120%	146	KCFS
18)	DWR	110%	35%	TOTAL
19)	CHJ	120%	130	KCFS
(IF	SPILL	EXPECTED		
20)	CHJ	115%	60	KCFS
(IF	SPILL	EXPECTED TO		

4 SPILL IS AS FOLLOWS

31)	LWG	125%	63	KCFS
32)	IHR	125%	110	KCFS
33)	TDA	125%	269	KCFS
34)	BON	125%	215	KCFS
35)	LGS	125%	82	KCFS
36)	LMN	125%	80	KCFS
37)	MCN	125%	230	KCFS
38)	JDA	125%	190	KCFS
39)	GCL	115%	5	KCFS
40)	GCL	120%	12	KCFS
41)	CHJ	125%	190	KCFS
42)	GCL	122%	21	KCFS

THROUGH OUTLET TUBES.

1-May

LEVEL		1 SPILL	FISH	NOT
ALL	READY	SPILLING	LEVELS	
	1)	LWG	FISH	45 KCFS
	2)	IHR	FISH	85 KCFS
	3)	TDA	FISH	98 KCFS
	4)	BON	FISH	95 KCFS
	5)	LGS	FISH	40 KCFS
	6)	LMN	FISH	24 KCFS
	7)	MCN	FISH	165 KCFS
	8)	JDA	FISH	146 KCFS
	9)	CHJ	110%	22 KCFS

**AS MEASURE IN AND
DOWNSTF RESPECTIVELY.

LEVEL		2 SPILL	FOLLOWS:	
	10)	LWG	120%	45 KCFS
	11)	IHR	120%	85 KCFS
	12)	TDA	120%	170 KCFS
	13)	BON	120%	100 KCFS
	14)	LGS	120%	50 KCFS
	15)	LMN	120%	50 KCFS
	16)	MCN	120%	185 KCFS
	17)	JDA	120%	141 KCFS
	18)	DWR	110%	35% TOTAL
	19)	CHJ	120%	130 KCFS
	(IF	SPILL	EXPECTED	
	20)	CHJ	115%	60 KCFS
	(IF	SPILL	EXPECTED	

LEVEL		4 SPILL	FOLLOWS:	
	31)	LWG	125%	63 KCFS
	32)	IHR	125%	110 KCFS
	33)	TDA	125%	269 KCFS
	34)	BON	125%	200 KCFS
	35)	LGS	125%	82 KCFS
	36)	LMN	125%	80 KCFS
	37)	MCN	125%	230 KCFS
	38)	JDA	125%	190 KCFS
	39)	GCL	115%	5 KCFS
	40)	GCL	120%	12 KCFS
	41)	CHJ	125%	190 KCFS
	42)	GCL	122%	21 KCFS
	THROUGH	OUTLET		

15-May

spill cost estimates.xlsx

LEVEL		1 SPILL		
ALL	READY	SPILLING		
	1)	LWG	FISH	45 KCFS
	2)	IHR	FISH	90 KCFS
	3)	TDA	FISH	96 KCFS
	4)	BON	FISH	95 KCFS
	5)	LGS	FISH	35 KCFS
	6)	LMN	FISH	27 KCFS
	7)	MCN	FISH	145 KCFS
	8)	JDA	FISH	135 KCFS
	9)	CHJ	110%	25 KCFS

**AS MEASURE IN THE TAILWATE AND
DOWNSTF RESPECTIVELY.

LEVEL		2 SPILL	IS AS	FOLLOWS
	10)	LWG	120%	49 KCFS
	11)	IHR	120%	85 KCFS
	12)	TDA	120%	170 KCFS
	13)	BON	120%	100 KCFS
	14)	LGS	120%	50 KCFS
	15)	LMN	120%	50 KCFS
	16)	MCN	120%	185 KCFS
	17)	JDA	120%	141 KCFS
	18)	DWR	110%	35% TOTAL
	19)	CHJ	120%	130 KCFS
	(IF	SPILL	EXPECTED	
	20)	CHJ	115%	80 KCFS
	(IF	SPILL	EXPECTED	

LEVEL		4 SPILL	IS AS	FOLLOWS
	31)	LWG	125%	63 KCFS
	32)	IHR	125%	110 KCFS
	33)	TDA	125%	269 KCFS
	34)	BON	125%	200 KCFS
	35)	LGS	125%	82 KCFS
	36)	LMN	125%	80 KCFS
	37)	MCN	125%	230 KCFS
	38)	JDA	125%	190 KCFS
	39)	GCL	115%	5 KCFS
	40)	GCL	120%	10 KCFS
	41)	CHJ	125%	190 KCFS
	42)	GCL	122%	21 KCFS
	THROUGH	OUTLET	TUBES.	

1-Jun

LEVEL 1 SPILL FISH
ALL READY SPILLING LEVELS

1)	LWG	FISH		41 KCFS
2)	IHR	FISH		90 KCFS
3)	TDA	FISH		117 KCFS
4)	BON	FISH		95 KCFS
5)	LGS	FISH		35 KCFS
6)	LMN	FISH		26 KCFS
7)	MCN	FISH		145 KCFS
8)	JDA	FISH		140 KCFS
9)	CHJ		110%	20 KCFS

**AS MEASURE IN AND
DOWNSTF RESPECTIVELY.

LEVEL 2 SPILL

10)	LWG	120%	52 KCFS
11)	IHR	120%	85 KCFS
12)	TDA	120%	163 KCFS
13)	BON	120%	100 KCFS
14)	LGS	120%	50 KCFS
15)	LMN	120%	50 KCFS
16)	MCN	120%	185 KCFS
17)	JDA	120%	145 KCFS
18)	DWR	110%	35% TOTAL
19)	CHJ	120%	130 KCFS
(IF	SPILL	EXPECTED	
20)	CHJ	115%	80 KCFS
(IF	SPILL	EXPECTED	

LEVEL 4 SPILL FOLLOWS.

31)	LWG	125%	63 KCFS
32)	IHR	125%	110 KCFS
33)	TDA	125%	269 KCFS
34)	BON	125%	200 KCFS
35)	LGS	125%	82 KCFS
36)	LMN	125%	80 KCFS
37)	MCN	125%	230 KCFS
38)	JDA	125%	190 KCFS
39)	GCL	115%	5 KCFS
40)	GCL	120%	10 KCFS
41)	CHJ	125%	190 KCFS
42)	GCL	122%	21 KCFS

THROUGH OUTLET

15-Jun

spill cost estimates.xlsx

LEVEL 1 SPILL (120%/115 TDG FISH
ALL READY SPILLING TO THESE LEVELS

1)	LWG	FISH		41 KCFS
2)	IHR	FISH		92 KCFS
3)	TDA	FISH		128 KCFS
4)	BON	FISH		100 KCFS
5)	LGS	FISH		35 KCFS
6)	LMN	FISH		24 KCFS
7)	MCN	FISH		145 KCFS
8)	JDA	FISH		140 KCFS
9)	CHJ		110%	20 KCFS

**AS MEASURE IN THE TAILWATE AND
DOWNSTF RESPECTIVELY.

LEVEL 2 SPILL FOLLOWS

10)	LWG	120%	55 KCFS
11)	IHR	120%	90 KCFS
12)	TDA	120%	142 KCFS
13)	BON	120%	122 KCFS
14)	LGS	120%	52 KCFS
15)	LMN	120%	72 KCFS
16)	MCN	120%	190 KCFS
17)	JDA	120%	165 KCFS
18)	DWR	110%	35% TOTAL
19)	CHJ	120%	110 KCFS
(IF	SPILL	EXPECTED	
20)	CHJ	115%	70 KCFS
(IF	SPILL	EXPECTED	

LEVEL 4 SPILL IS AS FOLLOWS

31)	LWG	125%	70 KCFS
32)	IHR	125%	110 KCFS
33)	TDA	125%	269 KCFS
34)	BON	125%	170 KCFS
35)	LGS	125%	82 KCFS
36)	LMN	125%	80 KCFS
37)	MCN	125%	230 KCFS
38)	JDA	125%	190 KCFS
39)	GCL	115%	20 KCFS
40)	GCL	120%	25 KCFS
41)	CHJ	125%	190 KCFS
42)	GCL	122%	50 KCFS

THROUGH DRUMGATES.

1-Jul

LEVEL		1 SPILL	(120%/115 TDG		FISH		
ALL	READY	SPILLING	TO	THESE	LEVELS		
	1)	LWG	FISH	41	KCFS		
	2)	IHR	FISH	94	KCFS		
	3)	LGS	FISH	35	KCFS		
	4)	BON	FISH	125	KCFS		
	5)	MCN	FISH	145	KCFS		
	6)	JDA	FISH	140	KCFS		
	7)	TDA	FISH	126	KCFS		
	8)	LMN	FISH	26	KCFS		
	9)	CHJ	110%	15	KCFS		
	10)	GCL	110%	5	KCFS		
	11)	DWR	110%	35%	TOTAL	FLOW	
LEVEL		2 SPILL	IS	AS	FOLLOWS:		
	12)	LWG	120%	44	KCFS		
	13)	IHR	120%	90	KCFS		
	14)	LGS	120%	52	KCFS		
	15)	BON	120%	118	KCFS		
	16)	MCN	120%	190	KCFS		
	17)	JDA	120%	140	KCFS		
	18)	TDA	120%	160	KCFS		
	19)	LMN	120%	72	KCFS		
	20)	CHJ	115%	60	KCFS		
	(IF	SPILL	EXPECTED				
	21)	GCL	115%	20	KCFS		
	22)	CHJ	120%	107	KCFS		
	(IF	SPILL	EXPECTED				
	23)	GCL	120%	55	KCFS		
LEVEL		4 SPILL	IS	AS	FOLLOWS:		
	34)	LWG	125%	70	KCFS		
	35)	IHR	125%	110	KCFS		
	36)	LGS	125%	82	KCFS		
	37)	BON	125%	205	KCFS		
	38)	MCN	125%	299	KCFS		
	39)	JDA	125%	195	KCFS		
	40)	TDA	125%	269	KCFS		
	41)	LMN	125%	80	KCFS		
	42)	CHJ	125%	190	KCFS		
	43)	GCL	125%	82	KCFS		
	THROUGH	DRUMGATES.					

15-Jul Priority spill cost estimates.xlsx

LEVEL		1 SPILL	(120%/115 TDG		FISH		
ALREADY	SPILLING	TO	THESE	LEVELS	AS		
	1)	LWG	FISH	25	KCFS		
	2)	IHR	FISH	94	KCFS		
	3)	LGS	FISH	35	KCFS		
	4)	BON	FISH	121	KCFS		
	5)	MCN	FISH	145	KCFS		
	6)	JDA	FISH	144	KCFS		
	7)	TDA	FISH	128	KCFS		
	8)	LMN	FISH	26	KCFS		
	9)	CHJ	110%	15	KCFS		
	10)	GCL	110%	5	KCFS		
	11)	DWR	110%	35%	TOTAL		
LEVEL		2 SPILL	IS	AS	FOLLOWS		
	12)	LWG	120%	44	KCFS		
	13)	IHR	120%	90	KCFS		
	14)	LGS	120%	52	KCFS		
	15)	BON	120%	100	KCFS		
	16)	MCN	120%	175	KCFS		
	17)	JDA	120%	140	KCFS		
	18)	TDA	120%	160	KCFS		
	19)	LMN	120%	72	KCFS		
	20)	CHJ	115%	60	KCFS		
	(IF	SPILL	EXPECTED				
	21)	GCL	115%	15	KCFS		
	22)	CHJ	120%	110	KCFS		
	(IF	SPILL	EXPECTED				
	23)	GCL	120%	45	KCFS		
LEVEL		4 SPILL	IS	AS	FOLLOWS		
	34)	LWG	125%	70	KCFS		
	35)	IHR	125%	110	KCFS		
	36)	LGS	125%	82	KCFS		
	37)	BON	125%	160	KCFS		
	38)	MCN	125%	299	KCFS		
	39)	JDA	125%	195	KCFS		
	40)	TDA	125%	269	KCFS		
	41)	LMN	125%	80	KCFS		
	42)	CHJ	125%	190	KCFS		
	43)	GCL	125%	82	KCFS		
	THROUGH	DRUMGATES.					

1-Aug Priority

LEVEL	1	SPILL	(120%/115	TDG		FISH
ALREADY	SPILLING	TO	THESE	LEVELS		AS
	1)	LWG	FISH		25	KCFS
	2)	LGS	FISH		35	KCFS
	3)	LMN	FISH		26	KCFS
	4)	IHR	FISH		94	KCFS
	5)	MCN	FISH		170	KCFS
	6)	JDA	FISH		160	KCFS
	7)	TDA	FISH		124	KCFS
	8)	BON	FISH		125	KCFS
	9)	CHJ	110%		15	KCFS
	10)	GCL	110%		0	KCFS
FLOW	11)	DWR	110%		35%	TOTAL FLOW

LEVEL	2	SPILL	IS	AS		FOLLOWS:
	12)	LWG	120%		44	KCFS
	13)	LGS	120%		52	KCFS
	14)	LMN	120%		72	KCFS
	15)	IHR	120%		90	KCFS
	16)	MCN	120%		180	KCFS
	17)	JDA	120%		160	KCFS
	18)	TDA	120%		124	KCFS
	19)	BON	120%		128	KCFS
	20)	CHJ	115%		60	KCFS
	(IF	SPILL	EXPECTED			
	21)	GCL	115%		3	KCFS
	22)	CHJ	120%		100	KCFS
	(IF	SPILL	EXPECTED			
	23)	GCL	120%		45	KCFS

LEVEL	4	SPILL	IS	AS		FOLLOWS:
	34)	LWG	125%		70	KCFS
	35)	LGS	125%		82	KCFS
	36)	LMN	125%		80	KCFS
	37)	IHR	125%		110	KCFS
	38)	MCN	125%		299	KCFS
	39)	JDA	125%		195	KCFS
	40)	TDA	125%		269	KCFS
	41)	BON	125%		170	KCFS
	42)	CHJ	125%		190	KCFS
	43)	GCL	125%		82	KCFS
	THROUGH	DRUMGATES.				

16-Aug Priority

LEVEL	1	SPILL	(120%/115	TDG		FISH
ALREADY	SPILLING	TO	THESE	LEVELS		AS
	1)	LWG	FISH		25	KCFS
	2)	LGS	FISH		35	KCFS
	3)	LMN	FISH		26	KCFS
	4)	IHR	FISH		94	KCFS
	5)	MCN	FISH		170	KCFS
	6)	JDA	FISH		160	KCFS
	7)	TDA	FISH		124	KCFS
	8)	BON	FISH		117	KCFS
	9)	CHJ	110%		15	KCFS
	10)	GCL	110%		0	KCFS
	11)	DWR	110%		35%	TOTAL

LEVEL	2	SPILL	IS	AS		FOLLOWS
	12)	LWG	120%		44	KCFS
	13)	LGS	120%		52	KCFS
	14)	LMN	120%		72	KCFS
	15)	IHR	120%		90	KCFS
	16)	MCN	120%		180	KCFS
	17)	JDA	120%		160	KCFS
	18)	TDA	120%		124	KCFS
	19)	BON	120%		128	KCFS
	20)	CHJ	115%		60	KCFS
	(IF	SPILL	EXPECTED			
	21)	GCL	115%		3	KCFS
	22)	CHJ	120%		100	KCFS
	(IF	SPILL	EXPECTED			
	23)	GCL	120%		45	KCFS

LEVEL	4	SPILL	IS	AS		FOLLOWS
	34)	LWG	125%		70	KCFS
	35)	LGS	125%		82	KCFS
	36)	LMN	125%		80	KCFS
	37)	IHR	125%		110	KCFS
	38)	MCN	125%		299	KCFS
	39)	JDA	125%		195	KCFS
	40)	TDA	125%		269	KCFS
	41)	BON	125%		170	KCFS
	42)	CHJ	125%		190	KCFS
	43)	GCL	125%		82	KCFS
	THROUGH	DRUMGATES.				

```
CM File:  SPill_Tier1_2012.dat spill assumptions for final rate case
CM   Source: Q:\RATES\12_RateCase15_final\OPERfinal
CM   Source: Q:\RATES\10_Tier1_2012\OPER\10_Tier1spil_2012qs.xls
CM
CM    Notes:  no change since last rate case except
CM              other spill (update to PNCA OY10) at BON.
CM              other spill at TDA (same as PNCA OY10 but add 3 kcfs in Mar)
CM              no spill requirement at LIB in Jun
CM..+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....8
CM
CM
CM  BONNEVILLE  #320  SOURCE:
CM      March:  no spill for Spring Creek
CM      Apr10-Jun15: 100 kcfs all hours (limited by 96kcfs gas cap)
CM    Jun16-Aug31: Alternating 2 days each:  85 kcfs day/121 kcfs at night and 95 kcfs all
hours.
CM
CM     Min Turbine:  30 kcfs,  gas cap:  120 kcfs
CM
SF   320    A  94875  95438  96375
SF   320    B                        40000 100000 100000  97625
FH   320    A 120000 120000 120000
FH   320    B                       120000 120000 120000 120000
TL   320    A  30000  30000  30000  30000  30000  30000  30000
TL   320    B  30000  30000  30000  30000  30000  30000  30000
CM  Spill for corner collector is PNCA OY10 spill as SO - jtt 3/15/10
CM
CM  THE DALLES  #365  SOURCE:
CM   Apr10-Aug31:  40% of Q all hours, 128 kcfs gas cap
CM         Min Turb  50 kcfs
SF   365    A    .40    .40    .40
SF   365    B                          .16    .40    .40    .40
FH   365    A 128000 128000 128000
FH   365    B                       128000 128000 128000 128000
CM
TL   365    A  50000  50000  50000  50000  50000  50000  50000
TL   365    B  50000  50000  50000  50000  50000  50000  50000
SO   365    A   6110   6170   6090   6080   6160   6040    890
SO   365    B   1020    680   4120   6050   6060   6110   6080
CM
CM
CM  JOHN DAY  #440
CM  Apr10-19 0 day 60% night (30% overall)
CM  Apr20-Jul20: 30% all hrs
CM  Jul21-Aug31: 30% of flow, all hrs
CM      94 kcfs cap
CM     Min Turb.   50 kcfs
SF   440    A   .300   .300   .300
SF   440    B                        .1200  .3000  .3000  .3000
FH   440    A  94000  94000  94000
FH   440    B                        94000  94000  94000  94000
TL   440    A  50000  50000  50000  50000  50000  50000  50000
TL   440    B  50000  50000  50000  50000  50000  50000  50000
CM
CM
CM  MCNARY  #488
CM       Apr10-Jun15:  40% of flow
CM       Jun16-Aug31:  50% of flow
CM
CM       Gas cap kcfs: 121 spring, 138 Jul, 148 Aug
CM       Min Turb.  50 kcfs
SF   488    A    .50    .50    .50
SF   488    B                          .16    .40    .40    .45
FH   488    A 138000 148000 148000
FH   488    B                       121000 121000 121000 121000
TL   488    A  50000  50000  50000  50000  50000  50000  50000
TL   488    B  50000  50000  50000  50000  50000  50000  50000
```

```
CM
CM
CM  ICE HARBOR  #502  SOURCE:
CM   Apr7 - Jun15: 35% of flow
CM   Jun16-Aug16: 30% of flow
CM     Gas cap 97 kcfs,  min turb  9.5 kcfs
SF   502    A   .30     .30   .019
SF   502    B                          .21    .35    .35   .325
CMSFI  502    A  43976  22167
CMSFI  502    B                        28817  33250  33250  33250
FH   502    A  97000  97000  97000
FH   502    B                       97000  97000  97000  97000
TL   502    A   9500   9500   9500   9500   9500   9500   9500

TL   502    B   9500   9500   9500   9500   9500   9500   9500
CM
CM
CM  LOWER MONUMENTAL  #504  SOURCE:  Apr3-Jun20
CM    Gas cap 23 kcfs, min turb 11.5 kcfs
CM   Apr7-May6 & May21-Jun4:  gas cap (23 kcfs) all hrs
CM   Jun 5 - Aug 15 :  17 kcfs all hrs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   504    A  17000  17000      0
SF   504    B                       13800  23000  12613  17800
FH   504    A  23000  23000  23000
FH   504    B                       23000  23000  23000  23000
CM
TL   504    A  11500  11500  11500  11500  11500  11500  11500
TL   504    B  11500  11500  11500  11500  11500  11500  11500
CM
CM
CM  LITTLE GOOSE  #518
CM   Apr5-May6 & May21-Aug12: 30% of flow
CM   Gas Cap 27 kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   518    A    .30    .24      0
SF   518    B                          .22    .30   .165    .30
FH   518    A  27000  27000  27000
FH   518    B                       27000  27000  27000  27000
CM
TL   518    A  11500  11500  11500  11500  11500  11500  11500
TL   518    B  11500  11500  11500  11500  11500  11500  11500
CM
CM
CM  LOWER GRANITE #520  SOURCE:
CM    Apr3-May6 & May21-June4:  20 kcfs all hrs
CM    Jun5-Aug7:  18 kcfs all hrs
CM   Gas cap 40kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   520    A  18000   8400      0
SF   520    B                       17333  20000  10968  18267
FH   520    A  40000  40000  40000
FH   520    B                       40000  40000  40000  40000
CM
TL   520    A  11500  11500  11500  11500  11500  11500  11500
TL   520    B  11500  11500  11500  11500  11500  11500  11500
CM
CM  JTT 4/2/13 - REMOVED LIBBY JUNE SPILL IN 12_RATECASE15_FINAL STUDY
```

```
CM File:  SPill_Tier1_2012noFBgascap.dat file
CM
CM
CM  BONNEVILLE  #320  SOURCE:
CM      March:  no spill for Spring Creek
CM      Apr10-Jun15: 100 kcfs all hours (limited by 96kcfs gas cap)
CM    Jun16-Aug31: Alternating 2 days each:  85 kcfs day/121 kcfs at night and 95 kcfs all
hours.
CM
CM     Min Turbine:  30 kcfs,  gas cap:  120 kcfs
CM
SF   320    A  94875  95438  96375
SF   320    B                        40000 100000 100000  97625
CMFH   320    A 120000 120000 120000
CMFH   320    B                         120000 120000 120000 120000
FH   320    A 148000 148000 148000
FH   320    B                       127000 127000 127000 127000
TL   320    A  30000  30000  30000  30000  30000  30000  30000
TL   320    B  30000  30000  30000  30000  30000  30000  30000
CM  Spill for corner collector is PNCA OY10 spill as SO - jtt 3/15/10
CM
CM  THE DALLES  #365  SOURCE:
CM   Apr10-Aug31:  40% of Q all hours, 128 kcfs gas cap
CM         Min Turb  50 kcfs
SF   365    A    .40    .40    .40
SF   365    B                          .16    .40    .40    .40
CMFH   365    A 128000 128000 128000
CMFH   365    B                         128000 128000 128000 128000
FH   365    A 133000 133000 133000
FH   365    B                       133000 133000 133000 133000
TL   365    A  50000  50000  50000  50000  50000  50000  50000
TL   365    B  50000  50000  50000  50000  50000  50000  50000
SO   365    A   6110   6170   6090   6080   6160   6040    890
SO   365    B   1020    680   4120   6050   6060   6110   6080
CM
CM
CM  JOHN DAY  #440
CM  Apr10-19 0 day 60% night (30% overall)
CM  Apr20-Jul20: 30% all hrs
CM  Jul21-Aug31: 30% of flow, all hrs
CM      94 kcfs cap
CM     Min Turb.   50 kcfs
SF   440    A   .300   .300   .300
SF   440    B                        .1200  .3000  .3000  .3000
CMFH   440    A  94000  94000  94000
CMFH   440    B                          94000  94000  94000  94000
FH   440    A  98000  98000  98000
FH   440    B                        98000  98000  98000  98000
TL   440    A  50000  50000  50000  50000  50000  50000  50000
TL   440    B  50000  50000  50000  50000  50000  50000  50000
CM
CM
CM  MCNARY  #488
CM       Apr10-Jun15:  40% of flow
CM       Jun16-Aug31:  50% of flow
CM
CM       Gas cap kcfs: 121 spring, 138 Jul, 148 Aug
CM       Min Turb.  50 kcfs
SF   488    A    .50    .50    .50
SF   488    B                          .16    .40    .40    .45
CMFH   488    A 138000 148000 148000
CMFH   488    B                         121000 121000 121000 121000
FH   488    A 138000 148000 148000
FH   488    B                       122000 122000 122000 122000
TL   488    A  50000  50000  50000  50000  50000  50000  50000
TL   488    B  50000  50000  50000  50000  50000  50000  50000
CM
```

```
CM
CM  ICE HARBOR  #502  SOURCE:
CM   Apr7 - Jun15: 35% of flow
CM   Jun16-Aug16: 30% of flow
CM     Gas cap 97 kcfs,  min turb  9.5 kcfs
SF   502    A   .30     .30   .019
SF   502    B                          .21    .35    .35   .325
CMSFI  502    A  43976  22167
CMSFI  502    B                          28817  33250  33250  33250
FH   502    A  97000  97000  97000
FH   502    B                        97000  97000  97000  97000
TL   502    A   9500   9500   9500   9500   9500   9500   9500

TL   502    B   9500   9500   9500   9500   9500   9500   9500
CM
CM
CM  LOWER MONUMENTAL  #504  SOURCE:  Apr3-Jun20
CM    Gas cap 23 kcfs, min turb 11.5 kcfs
CM   Apr7-May6 & May21-Jun4:  gas cap (23 kcfs) all hrs
CM   Jun 5 - Aug 15 :  17 kcfs all hrs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   504    A  17000  17000      0
SF   504    B                        13800  23000  12613  17800
CMFH   504    A  23000  23000  23000
CMFH   504    B                          23000  23000  23000  23000
FH   504    A  31000  31000  31000
FH   504    B                        31000  31000  31000  31000
CM
TL   504    A  11500  11500  11500  11500  11500  11500  11500
TL   504    B  11500  11500  11500  11500  11500  11500  11500
CM
CM
CM  LITTLE GOOSE  #518
CM   Apr5-May6 & May21-Aug12: 30% of flow
CM   Gas Cap 27 kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   518    A    .30    .24      0
SF   518    B                          .22    .30   .165    .30
CMFH   518    A  27000  27000  27000
CMFH   518    B                          27000  27000  27000  27000
FH   518    A  29000  29000  29000
FH   518    B                        29000  29000  29000  29000
CM
TL   518    A  11500  11500  11500  11500  11500  11500  11500
TL   518    B  11500  11500  11500  11500  11500  11500  11500
CM
CM  -------------------------
CM  LOWER GRANITE #520  SOURCE:
CM    Apr3-May6 & May21-June4:  20 kcfs all hrs
CM    Jun5-Aug7:  18 kcfs all hrs
CM   Gas cap 40kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF   520    A  18000   8400      0
SF   520    B                        17333  20000  10968  18267
CMFH   520    A  40000  40000  40000
CMFH   520    B                          40000  40000  40000  40000
FH   520    A  44000  44000  44000
FH   520    B                        50000  50000  50000  50000
CM
TL   520    A  11500  11500  11500  11500  11500  11500  11500
TL   520    B  11500  11500  11500  11500  11500  11500  11500
CM
```

```
CM File:  SPill_12RAteCase15newgascaps.dat file
CM
CM      6/27/2013  kaf:  updated gas caps based on typical Spill Priority List from
KBartlett
CM                       for everything else: still using same spill dates & assumptions
as Rate Case
CM
CM  BONNEVILLE  #320  SOURCE:
CM      March:  no spill for Spring Creek
CM      Apr10-Jun15: 100 kcfs all hours (limited by gas cap)
CM    Jun16-Aug31: Alternating 2 days each:  85 kcfs day/121 kcfs at night and 95 kcfs all
hours.
CM
CM     Min Turbine:  30 kcfs,  gas cap:  95 kcfs spring, 120 kcfs summer
CM
SF   320    A  94875  95438  96375
SF   320    B                        40000 100000 100000  97625
FH   320    A 120000 120000 120000
FH   320    B                        95000  95000  95000  95000
TL   320    A  30000  30000  30000  30000  30000  30000  30000
TL   320    B  30000  30000  30000  30000  30000  30000  30000
CM  Spill for corner collector is PNCA OY10 spill as SO - jtt 3/15/10
CM
CM  THE DALLES  #365  SOURCE:
CM   Apr10-Aug31:  40% of Q all hours,  Min Turbine  50 kcfs
CM                 gas cap 110kcfs spring, 125kcfs summer
CM
SF   365    A    .40    .40    .40
SF   365    B                          .16    .40    .40    .40
FH   365    A 125000 125000 125000
FH   365    B                       110000 110000 110000 110000
CM
TL   365    A  50000  50000  50000  50000  50000  50000  50000
TL   365    B  50000  50000  50000  50000  50000  50000  50000
CM   SO is Same as PNCA OY12 except add 3kcfs in Mar for the sluiceway operation.
SO   365    A   6110   6170   6090   6080   6160   6040    890
SO   365    B   1020    680   4120   6050   6060   6110   6080
CM
CM  JOHN DAY  #440
CM  Apr10-19 0 day 60% night (30% overall)
CM  Apr20-Jul20: 30% all hrs
CM  Jul21-Aug31: 30% of flow, all hrs
CM      140 spring & 150 summer  kcfs gas cap
CM     Min Turb.   50 kcfs
SF   440    A   .300   .300   .300
SF   440    B                        .1200  .3000  .3000  .3000
FH   440    A 150000 150000 150000
FH   440    B                       140000 140000 140000 140000
TL   440    A  50000  50000  50000  50000  50000  50000  50000
TL   440    B  50000  50000  50000  50000  50000  50000  50000
CM
CM  MCNARY  #488
CM       Apr10-Jun15:  40% of flow
CM       Jun16-Aug31:  50% of flow
CM       Gas cap kcfs: 150 spring, 155 summer
CM       Min Turb.  50 kcfs
SF   488    A    .50    .50    .50
SF   488    B                          .16    .40    .40    .45
FH   488    A 155000 155000 155000
FH   488    B                       150000 150000 150000 150000
TL   488    A  50000  50000  50000  50000  50000  50000  50000
TL   488    B  50000  50000  50000  50000  50000  50000  50000
CM
CM  ICE HARBOR  #502  SOURCE:
CM   Apr7 - Jun15: 35% of flow
CM   Jun16-Aug16: 30% of flow
CM     Gas cap kcfs: 90 spring, 94 summer    min turb:  9.5 kcfs
```

```
SF    502     A    .30      .30    .019
SF    502     B                           .21     .35     .35    .325
CMSFI  502     A  43976  22167
CMSFI  502     B                          28817  33250  33250  33250
FH    502     A  94000  94000  94000
FH    502     B                         90000  90000  90000  90000
TL    502     A   9500   9500   9500   9500   9500   9500   9500

TL    502     B   9500   9500   9500   9500   9500   9500   9500
CM
CM  LOWER MONUMENTAL  #504  SOURCE:  Apr3-Jun20
CM    Gas cap 23 kcfs, min turb 11.5 kcfs
CM   Apr7-May6 & May21-Jun4:  gas cap 25 kcfs spring, 26 kcfs summer
CM   Jun 5 - Aug 15 :  17 kcfs all hrs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF    504     A  17000  17000      0
SF    504     B                         15000  25000  13710  18067
FH    504     A  26000  26000  26000
FH    504     B                         25000  25000  25000  25000
CM
TL    504     A  11500  11500  11500  11500  11500  11500  11500
TL    504     B  11500  11500  11500  11500  11500  11500  11500
CM
CM  LITTLE GOOSE  #518
CM   Apr5-May6 & May21-Aug12: 30% of flow
CM   Gas Cap 35 kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF    518     A    .30    .24      0
SF    518     B                           .22     .30   .165    .30
FH    518     A  35000  35000  35000
FH    518     B                         35000  35000  35000  35000
CM
TL    518     A  11500  11500  11500  11500  11500  11500  11500
TL    518     B  11500  11500  11500  11500  11500  11500  11500
CM
CM  LOWER GRANITE #520  SOURCE:
CM    Apr3-May6 & May21-June4:  20 kcfs all hrs
CM    Jun5-Aug7:  18 kcfs all hrs
CM   Gas cap 40kcfs, min turb 11.5 kcfs
CM    Also see Spil_LSnake_Tier1_2012.DAT as spring spill varies based on forecast
SF    520     A  18000   8400      0
SF    520     B                         17333  20000  10968  18267
FH    520     A  25000  25000  25000
FH    520     B                         41000  41000  41000  41000
CM
TL    520     A  11500  11500  11500  11500  11500  11500  11500
TL    520     B  11500  11500  11500  11500  11500  11500  11500
CM
```

```
CM  File:  SPILL_CourtOrder_2012gascaps.DAT
CM  copied SPILL_2012_020612.DAT from inventory study and updated the gas caps   7/16/2013

CM                     based on 2012 actual gas caps from Corps spill priority lists
CM  Spring gas caps are for Apr-June, summer gas caps are for July-August
CM  Also updated based on 2013 FOP  7/24/2013
CM
CM  BONNEVILLE  #320
CM      Apr 10 - Jun 15:  Spill 100 kcfs All Hours (except TDG cap is 95 kcfs, which
limits the spill)
CM      June 16 - July 20:  95 kcfs spill vs 85 k spill day/121k Spill night
CM      July 21 - Aug  31:  Spill 75 kcfs Day and gas cap @ Night
CM      B2 corner collector 5 kcfs spill included in SO in SPIL_10PR_A.DAT
CM      Spill cap 115/120% TDG: 95 kcfs Spring, 120 kcfs summer
CM                see BONspill for court order.xls for detailed calculations
SF   320    A  92147  88594  90938
SF   320    B                        40000 100000 100000  97625
FH   320    A 120000 120000 120000
FH   320    B                        95000  95000  95000  95000
TL   320    A  30000  30000  30000
TL   320    B                        30000  30000  30000  30000
CM
CM  THE DALLES  #365
CM      Apr 10 - Aug 31:  40% of flow, All hours
CM      Spill cap 115/120% TDG: 110 kcfs spring, 125 kcfs summer
SF   365    A   0.40   0.40   0.40
SF   365    B                         0.16   0.40   0.40   0.40
FH   365    A 125000 125000 125000
FH   365    B                       110000 110000 110000 110000
TL   365    A  50000  50000  50000
TL   365    B                        50000  50000  50000  50000
CM
CM  JOHN DAY  #440
CM      Apr 10 - Apr 20: 30% All hours
CM      Apr 21 - Jul 20: 30%-40% All hours alternating in 48 hour blocks

CM      Jul 21 - Aug 31: 30% All hours
CM      Spill cap 115/120% TDG: 140 kcfs spring, 150 kcfs summer
SF   440    A   0.33   0.30   0.30
SF   440    B                         0.12   0.33   0.35   0.35
FH   440    A 150000 150000 150000
FH   440    B                       140000 140000 140000 140000
TL   440    A  50000  50000  50000
TL   440    B                        50000  50000  50000  50000
CM
CM  MCNARY  #488
CM      Apr 10 - Jun 19:  40% of flow all hours
CM      Jun 20-  Aug 31:  50% of flow all hours
CM      Spill cap 115/120% TDG: 150 kcfs spring, 155 kcfs summer
SF   488    A   0.50   0.50   0.50
SF   488    B                         0.16   0.40   0.40   0.44
FH   488    A 155000 155000 155000
FH   488    B                       150000 150000 150000 150000
TL   488    A  50000  50000  50000
TL   488    B                        50000  50000  50000  50000
CM
CM  ICE HARBOR  #502
CM          Apr 3 - Apr 28: 45 k day/TDG Night                          APR1=13 days at
45day/gascapNight= 67500x13/15= 58500
CM          Apr 29 - Jul 13: 30% vs 45 k day/TDG night in 48 hr blocks   APR2=13 days at
45day/gascapNight = 58500, plus 2 days at 30% (30%x2/15=4%)
CM          Jul 14 - Aug 31: 45 k day/TDG night                          May & Jun = half
time at 30% and half time at 67500 = 15% + 33750
CM          Spill Cap 115/120% TDG: 90 kcfs spring, 94 kcfs summer       July= 13 days at
45day/gascapNight plus 18 days alternating 30% vs 45day/gascapNight
CM            spring 45day/GasCapNight= (45+90)/2=67500                   so July= 13+9
days at 45day/gascapNight plus 9 days at 30%
```

```
CM            summer 45day/GasCapNight= (45+94)/2=69500                    so
July=69500x22/31 + 30%x9/31 = 49323 + 9%
CM
August=45day/GasCapNight=69500
SF   502    A   0.09
SF   502    B                                0.04   0.15   0.15
SFI  502    A  49323  69500  69500
SFI  502    B                         58500  58500  33750  33750
FH   502    A  94000  94000  94000
FH   502    B                         90000  90000  90000  90000
TL   502    A   8500   8500   8500
TL   502    B                          8500   8500   8500   8500
CM
CM  LOWER MONUMENTAL  #504
CM      Apr 3  - Jun 20:  gas cap, all hours                Apr1=25000x13/15=21667
CM      Jun 21 - Aug 31:  17 kcfs, all hours                June =
(25kx20/30)+(17kx10/30)=22.33kcfs
CM      115/120% gas cap:  25 kcfs spring, 26 kcfs summer
CM
SF   504    A  17000  17000  17000
SF   504    B                         21667  25000  25000  22333
FH   504    A  26000  26000  26000
FH   504    B                         25000  25000  25000  25000
TL   504    A  11500  11500  11500
TL   504    B                         11500  11500  11500  11500
CM
CM  LITTLE GOOSE  #518
CM      Apr 3 - Aug 31:  30% of flow All hours
CM      Spill cap 115/120% TDG: 35 kcfs spring, 35 kcfs summer
SF   518    A   0.30   0.30   0.30
SF   518    B                          0.26   0.30   0.30   0.30

FH   518    A  35000  35000  35000
FH   518    B                         35000  35000  35000  35000
TL   518    A  11500  11500  11500
TL   518    B                         11500  11500  11500  11500
CM
CM  LOWER GRANITE #520
CM      Apr 3 - Jun  20:  20 kcfs all hours
CM     Jun  21 - Aug 31:  18 kcfs all hours
CM      Spill cap 115/120% TDG: 41 kcfs spring, 25 kcfs summer
SF   520    A  18000  18000  18000
SF   520    B                         17333  20000  20000  19333
FH   520    A  25000  25000  25000
FH   520    B                         41000  41000  41000  41000
TL   520    A  11500  11500  11500
TL   520    B                         11500  11500  11500  11500
CM
CM
```

```
CM File:  SPilltogascaps.dat
CM
CM    Spill to 125% gas cap at all 8 mainstem federal projects
CM     also copy other spill, and min turbine from basecase OPER
CM
CM  BONNEVILLE  #320  spill Apr10-Aug31  125%=200/170kcfs sp/su
FH   320    A 170000 170000 170000
FH   320    B                        80000 200000 200000 200000
SF   320    A 170000 170000 170000
SF   320    B                        80000 200000 200000 200000
TL   320    A  30000  30000  30000  30000  30000  30000  30000
TL   320    B  30000  30000  30000  30000  30000  30000  30000
SO   320    A  11500  11500  11500   6890   6470   6960   4980
SO   320    B   3200   3750  10600  11500  11500  11500  11500
CM  Spill for corner collector is in AER step, PNCA OY10 spill as SO - jtt 3/15/10
CM
CM  THE DALLES  #365  spill Apr10-Aug31  125%=270/269kcfs sp/su
FH   365    A 269000 269000 269000
FH   365    B                       108000 270000 270000 270000
SF   365    A 269000 269000 269000
SF   365    B                       108000 270000 270000 270000
TL   365    A  50000  50000  50000  50000  50000  50000  50000
TL   365    B  50000  50000  50000  50000  50000  50000  50000
CM   SO data is Same as PNCA OY10 spill file except add 3kcfs in Mar per Kim.   jtt
3/15/10
SO   365    A   6110   6170   6090   6080   6160   6040    890
SO   365    B   1020    680   4120   6050   6060   6110   6080
CM
CM  JOHN DAY  #440  spill Apr10-Aug31   125%=190/195kcfs sp/su
FH   440    A 195000 195000 195000
FH   440    B                        76000 190000 190000 190000
SF   440    A 195000 195000 195000
SF   440    B                        76000 190000 190000 190000
TL   440    A  50000  50000  50000  50000  50000  50000  50000
TL   440    B  50000  50000  50000  50000  50000  50000  50000
SO   440    A   1280   1350   1300   1300   1430   1340   1040
SO   440    B    820    780   1050   1310   1300   1370   1270
CM
CM  MCNARY  #488  spill Apr10-Aug31   125%=230/299kcfs sp/su
FH   488    A 299000 299000 299000
FH   488    B                        92000 230000 230000 230000
SF   488    A 299000 299000 299000
SF   488    B                        92000 230000 230000 230000
TL   488    A  50000  50000  50000  50000  50000  50000  50000
TL   488    B  50000  50000  50000  50000  50000  50000  50000
SO   488    A   4700   4700   4700   4700   4700   4700   4510
SO   488    B   2810   2520   4240   4700   4700   4700   4700
CM
CM  ICE HARBOR  #602  spill Apr7-Aug31  125%=110kcfs sp/su
FH   502    A 110000 110000 110000
FH   502    B                        66000 110000 110000 110000
SF   502    A 110000 110000 110000
SF   502    B                        66000 110000 110000 110000
TL   502    A   9500   9500   9500   9500   9500   9500   9500

TL   502    B   9500   9500   9500   9500   9500   9500   9500
SO   502    A    790    900    800    770    850    690    580
SO   502    B    420    440    510    700    800    820    760
CM
CM  LOWER MONUMENTAL  #604  spill Apr7-Aug31 125%=80kcfs sp/su
FH   504    A  80000  80000  80000
FH   504    B                        48000  80000  80000  80000
SF   504    A  80000  80000  80000
SF   504    B                        48000  80000  80000  80000
TL   504    A  11500  11500  11500  11500  11500  11500  11500
TL   504    B  11500  11500  11500  11500  11500  11500  11500
SO   504    A    790    860    770    780    840    750    720
```

```
SO   504    B    450    410    560    770    780    840    780
CM
CM  LITTLE GOOSE  #518  spill Apr5-Aug31  125%=82kcfs sp/su
FH   518    A  82000  82000  82000
FH   518    B                          60100  82000  82000  82000
SF   518    A  82000  82000  82000
SF   518    B                          60100  82000  82000  82000
TL   518    A  11500  11500  11500  11500  11500  11500  11500
TL   518    B  11500  11500  11500  11500  11500  11500  11500
SO   518    A    590    620    500    750    640    500    460
SO   518    B    120    240    380    530    580    660    590
CM
CM  LOWER GRANITE #520  spill Apr3-Aug31  125%=63/70kcfs sp/su
FH   520    A  70000  70000  70000
FH   520    B                          54600  63000  63000  63000
SF   520    A  70000  70000  70000
SF   520    B                          54600  63000  63000  63000
TL   520    A  11500  11500  11500  11500  11500  11500  11500
TL   520    B  11500  11500  11500  11500  11500  11500  11500
SO   520    A    450    510    470    480    530    410    340
SO   520    B    100    130    230    420    440    440    460
CM
CM
CM  Mid-C projects- NOTE the midC projects have NOT been updated to 125% gas caps
CM
CM  Priest Rapids #1160  Apr16-Aug31
SF  1160    A  40000  40000  40000
SF  1160    B                          40000  40000  40000  40000
SO  1160    A                           2800   2800   2300    200
SO  1160    B    200   1100   1461    1800
FH  1160    A  40000  40000  40000
FH  1160    B                          40000  40000  40000  40000
CM
CM  Wanapum #1165  Apr16-Aug31
SF  1165    A  50000  50000  50000
SF  1165    B                          50000  50000  50000  50000
SO  1165    A                           4000   4000   3000    800
SO  1165    B    800   1200   1613    2000
FH  1165    A  50000  50000  50000
FH  1165    B                          50000  50000  50000  50000
CM
CM  Rock Island #1170  Apr16-Aug31
SF  1170    A  30000  30000  30000
SF  1170    B                          30000  30000  30000  30000
FH  1170    A  30000  30000  30000
FH  1170    B                          30000  30000  30000  30000
CM
CM  Rocky Reach #1200  Apr16-Aug31
SF  1200    A  30000  30000  30000
SF  1200    B                          30000  30000  30000  30000
SO  1200    A    200    200
SO  1200    B                                   200    200    200
FH  1200    A  30000  30000  30000
FH  1200    B                          30000  30000  30000  30000
CM
CM  Wells #1220  Apr16-Aug31
SF  1220    A  45000  45000  45000
SF  1220    B                          45000  45000  45000  45000
SO  1220    A   1000   1000   1000   1000   1000   1000   1000
SO  1220    B   1000   1000   1000   1000   1000   1000   1000
FH  1220    A  45000  45000  45000
FH  1220    B                          45000  45000  45000  45000
CM
```

```
CM File:  SPilltogascaps.dat
CM    Spill to 115/120 gas cap at all 8 mainstem federal projects and mid-C projects
CM     also copy other spill and min turbine from OPER
CM
CM  BONNEVILLE  #320  spill Apr10-Aug31
SF   320    A 120000 120000 120000
SF   320    B                        95000  95000  95000  95000
FH   320    A 120000 120000 120000
FH   320    B                        95000  95000  95000  95000
TL   320    A  30000  30000  30000  30000  30000  30000  30000
TL   320    B  30000  30000  30000  30000  30000  30000  30000
SO   320    A  11500  11500  11500   6890   6470   6960   4980
SO   320    B   3200   3750  10600  11500  11500  11500  11500
CM  Spill for corner collector is in AER step, PNCA OY10 spill as SO - jtt 3/15/10
CM
CM  THE DALLES  #365  spill Apr10-Aug31
SF   365    A 125000 125000 125000
SF   365    B                       110000 110000 110000 110000
FH   365    A 125000 125000 125000
FH   365    B                       110000 110000 110000 110000
TL   365    A  50000  50000  50000  50000  50000  50000  50000
TL   365    B  50000  50000  50000  50000  50000  50000  50000
SO   365    A   6110   6170   6090   6080   6160   6040    890
SO   365    B   1020    680   4120   6050   6060   6110   6080
CM
CM  JOHN DAY  #440  spill Apr10-Aug31
SF   440    A 150000 150000 150000
SF   440    B                       140000 140000 140000 140000
FH   440    A 150000 150000 150000
FH   440    B                       140000 140000 140000 140000
TL   440    A  50000  50000  50000  50000  50000  50000  50000
TL   440    B  50000  50000  50000  50000  50000  50000  50000
SO   440    A   1280   1350   1300   1300   1430   1340   1040
SO   440    B    820    780   1050   1310   1300   1370   1270
CM
CM  MCNARY  #488  spill Apr10-Aug31
SF   488    A 155000 155000 155000
SF   488    B                       150000 150000 150000 150000
FH   488    A 155000 155000 155000
FH   488    B                       150000 150000 150000 150000
TL   488    A  50000  50000  50000  50000  50000  50000  50000
TL   488    B  50000  50000  50000  50000  50000  50000  50000
SO   488    A   4700   4700   4700   4700   4700   4700   4510
SO   488    B   2810   2520   4240   4700   4700   4700   4700
CM
CM  ICE HARBOR  #602  spill Apr7-Aug31
SF   502    A  94000  94000  94000
SF   502    B                        90000  90000  90000  90000
FH   502    A  94000  94000  94000
FH   502    B                        90000  90000  90000  90000
TL   502    A   9500   9500   9500   9500   9500   9500   9500

TL   502    B   9500   9500   9500   9500   9500   9500   9500
SO   502    A    790    900    800    770    850    690    580
SO   502    B    420    440    510    700    800    820    760
CM
CM  LOWER MONUMENTAL  #604  spill Apr7-Aug31
SF   504    A  26000  26000  26000
SF   504    B                        25000  25000  25000  25000
FH   504    A  26000  26000  26000
FH   504    B                        25000  25000  25000  25000
TL   504    A  11500  11500  11500  11500  11500  11500  11500
TL   504    B  11500  11500  11500  11500  11500  11500  11500
SO   504    A    790    860    770    780    840    750    720
SO   504    B    450    410    560    770    780    840    780
CM
CM  LITTLE GOOSE  #518  spill Apr5-Aug31
```

```
CM
SF   518    A  35000  35000  35000
SF   518    B                        35000  35000  35000  35000
FH   518    A  35000  35000  35000
FH   518    B                        35000  35000  35000  35000
TL   518    A  11500  11500  11500  11500  11500  11500  11500
TL   518    B  11500  11500  11500  11500  11500  11500  11500
SO   518    A    590    620    500    750    640    500    460
SO   518    B    120    240    380    530    580    660    590
CM
CM  LOWER GRANITE #520  spill Apr3-Aug31
CM
SF   520    A  25000  25000  25000
SF   520    B                        41000  41000  41000  41000
FH   520    A  25000  25000  25000
FH   520    B                        41000  41000  41000  41000
TL   520    A  11500  11500  11500  11500  11500  11500  11500
TL   520    B  11500  11500  11500  11500  11500  11500  11500
SO   520    A    450    510    470    480    530    410    340
SO   520    B    100    130    230    420    440    440    460
CM
CM    Mid-C projects
CM
CM  Priest Rapids #1160  Apr16-Aug31
SF  1160    A  40000  40000  40000
SF  1160    B                        40000  40000  40000  40000
SO  1160    A                         2800   2800   2300    200
SO  1160    B    200   1100   1461   1800
FH  1160    A  40000  40000  40000
FH  1160    B                        40000  40000  40000  40000
CM
CM  Wanapum #1165  Apr16-Aug31
SF  1165    A  50000  50000  50000
SF  1165    B                        50000  50000  50000  50000
SO  1165    A                         4000   4000   3000    800
SO  1165    B    800   1200   1613   2000
FH  1165    A  50000  50000  50000
FH  1165    B                        50000  50000  50000  50000
CM
CM  Rock Island #1170  Apr16-Aug31
SF  1170    A  30000  30000  30000
SF  1170    B                        30000  30000  30000  30000
FH  1170    A  30000  30000  30000
FH  1170    B                        30000  30000  30000  30000
CM
CM  Rocky Reach #1200  Apr16-Aug31
SF  1200    A  30000  30000  30000
SF  1200    B                        30000  30000  30000  30000
SO  1200    A    200    200
SO  1200    B                                 200    200    200
FH  1200    A  30000  30000  30000
FH  1200    B                        30000  30000  30000  30000
CM
CM  Wells #1220  Apr16-Aug31
SF  1220    A  45000  45000  45000
SF  1220    B                        45000  45000  45000  45000
SO  1220    A   1000   1000   1000   1000   1000   1000   1000
SO  1220    B   1000   1000   1000   1000   1000   1000   1000
FH  1220    A  45000  45000  45000
FH  1220    B                        45000  45000  45000  45000
```

avg gas cap:	28	kcfs	34	total min flow w/ 17k spill
min turbine	11.5	kcfs	42	total min flow w/ 21k spill
h/k:	7		49	total min flow w/ 28k spill
forced spill starts at	117	kcfs total outflow		

Scenario 1

	June 1-4	June 5-20	June 21-30	July	August 1-15	August 16-31
days	4	16	10	31	15	16
target spill	28	28	17	17	17	17

Scenario 2

	June 1-4	June 5-20	June 21-30	July 1-31	August 1-15	August 16-31	Total
days	4	16	10	31	15	16	
target spill	28	21	21	21	21	21	
difference (2-1)	0	-7	4	4	4	4	
MW	0	49	-28	-28	-28	-28	
prices	21.97	21.97	21.97	28.98	31.28	31.28	
forced spill anyway?	60%	60%	60%	10%	60%	70%	or on min turbine?
$ value	0	165,379	-59,064	-543,273	-126,107	-100,886	-700,000
compared to scenario 1							

Scenario 3

	June 1-4	June 5-20	June 21-30	July 1-31	August 1-15	August 16-31	Total
days	4	16	10	31	15	16	
target spill	28	28	21	21	21	21	
difference (2-1)	0	0	4	4	4	4	
MW	0	0	-28	-28	-28	-28	
prices	21.97	21.97	21.97	28.98	31.28	31.28	
forced spill anyway?	60%	60%	60%	10%	60%	70%	or on min turbine?
$ value	0	0	-59,064	-543,273	-126,107	-100,886	-900,000
compared to scenario 1							

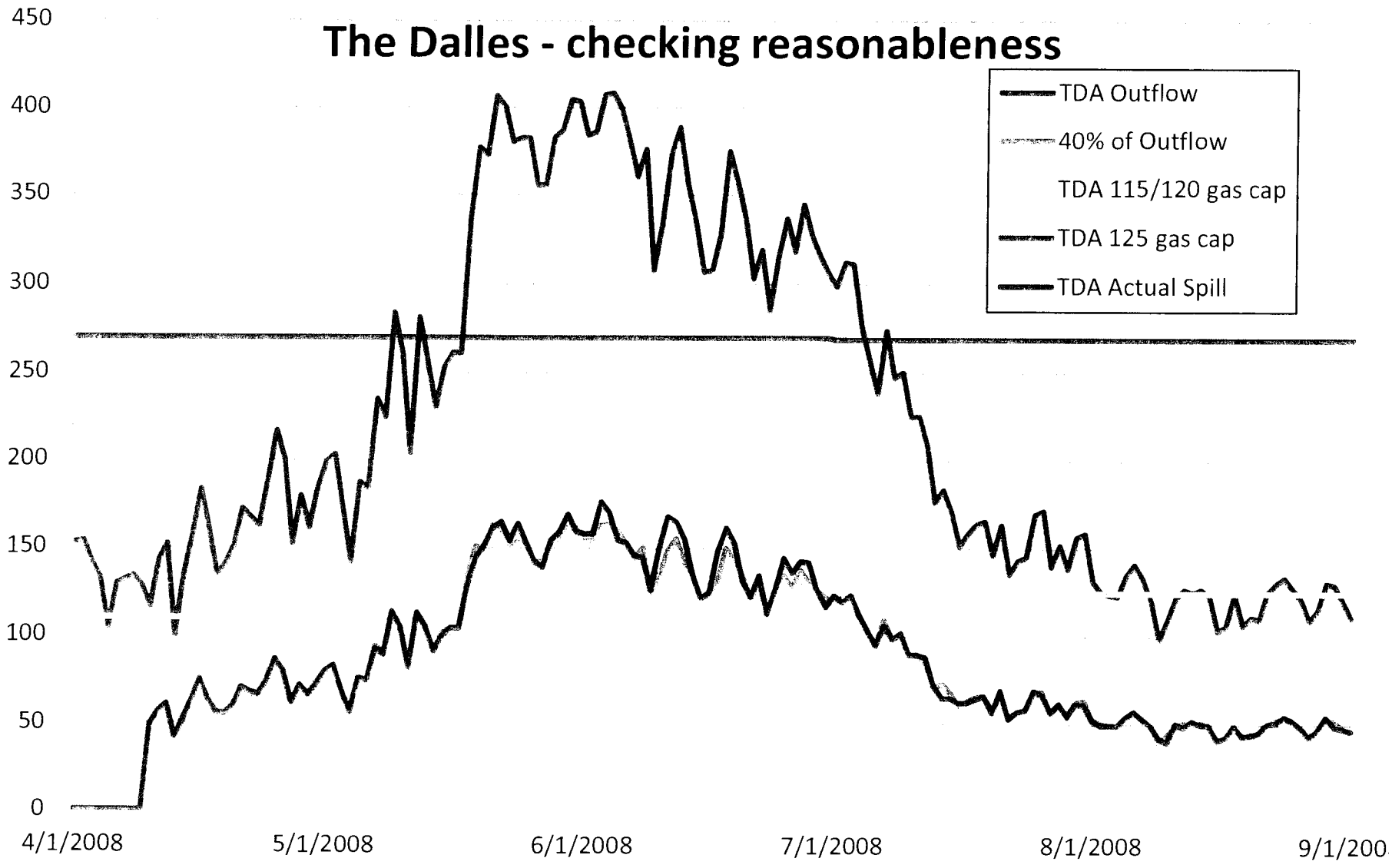
Gas/Spill Caps at mainstem projects based on Actual 2012 Spill Priority Lists

Spring (Apr-Jun)	120%/115% TDG
LWG	41 KCFS
IHR	90 KCFS
TDA	110 KCFS
BON	95 KCFS
LGS	35 KCFS
LMN	25 KCFS
MCN	150 KCFS
JDA	140 KCFS

Summer (Jul-Aug)	120%/115% TDG
LWG	25 KCFS
IHR	94 KCFS
LGS	35 KCFS
BON	120 KCFS
MCN	155 KCFS
JDA	150 KCFS
TDA	125 KCFS
LMN	26 KCFS

Spring (Apr-Jun)	125% TDG
LWG	63 KCFS
IHR	110 KCFS
TDA	270 KCFS
BON	200 KCFS
LGS	82 KCFS
LMN	80 KCFS
MCN	230 KCFS
JDA	190 KCFS

Summer (Jul-Aug)	125% TDG
LWG	70 KCFS
IHR	110 KCFS
LGS	82 KCFS
BON	170 KCFS
MCN	299 KCFS
JDA	195 KCFS
TDA	269 KCFS
LMN	80 KCFS


The Dalles - checking reasonableness
TDA Outflow
40% of Outflow
TDA 115/120 gas cap
TDA 125 gas cap
TDA Actual Spill
450
400
350
300
250
200
150
100
50
0
4/1/2008
5/1/2008
6/1/2008
7/1/2008
8/1/2008
9/1/200

Relevant excerpts from our recently published BP-14 Rate Case available at http://www.bpa.gov/Finance/RateCases/Pages/default.aspx

Rate Case documents: BP-14-FS-BPA-04 page 60-61; BP-14-FS-BPA-04A page 57

2.7.8 Court-Ordered Spill Risk

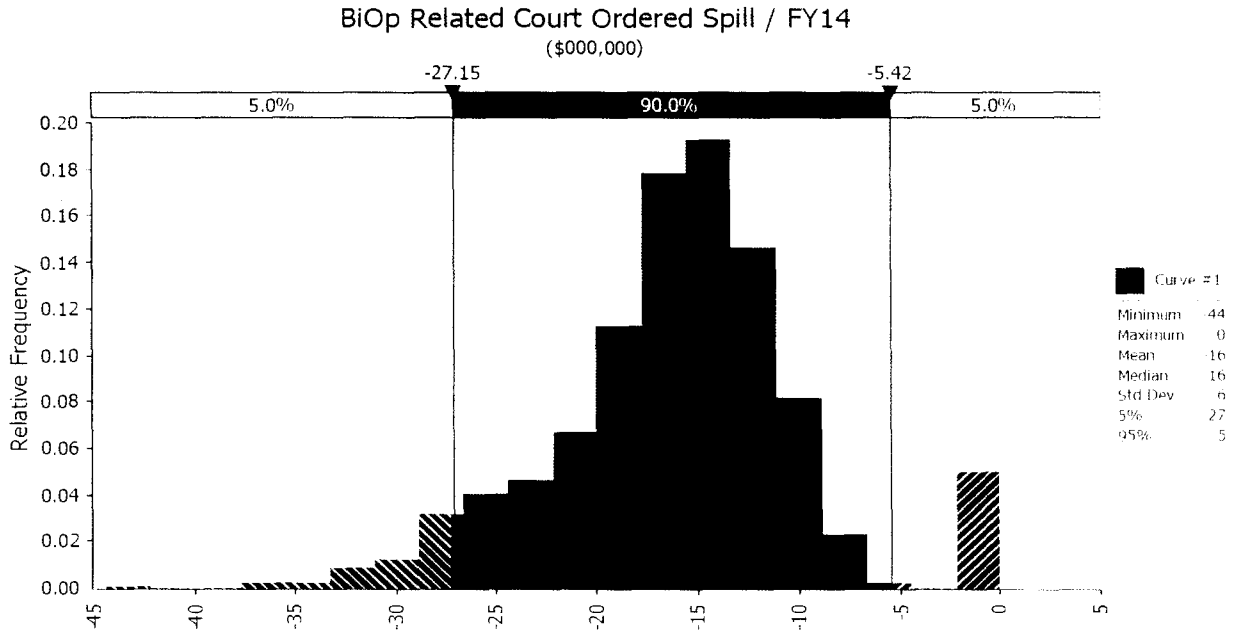
NORM models the uncertainty that BPA will be subject to a court order related to the 2008 FCRPS BiOp, or a subsequent FCRPS BiOp, requiring BPA to spill water at FCRPS projects at levels different from those assumed in the hydro studies used for ratesetting. Power Loads and Resources Study, BP-14-FS-BPA-03. Increased spill requirements would result in decreased generation and revenue. A BiOp-related court order would be an NFB event, which would increase the maximum amount that the CRAC can recover (the CRAC Cap). See section 4.2.

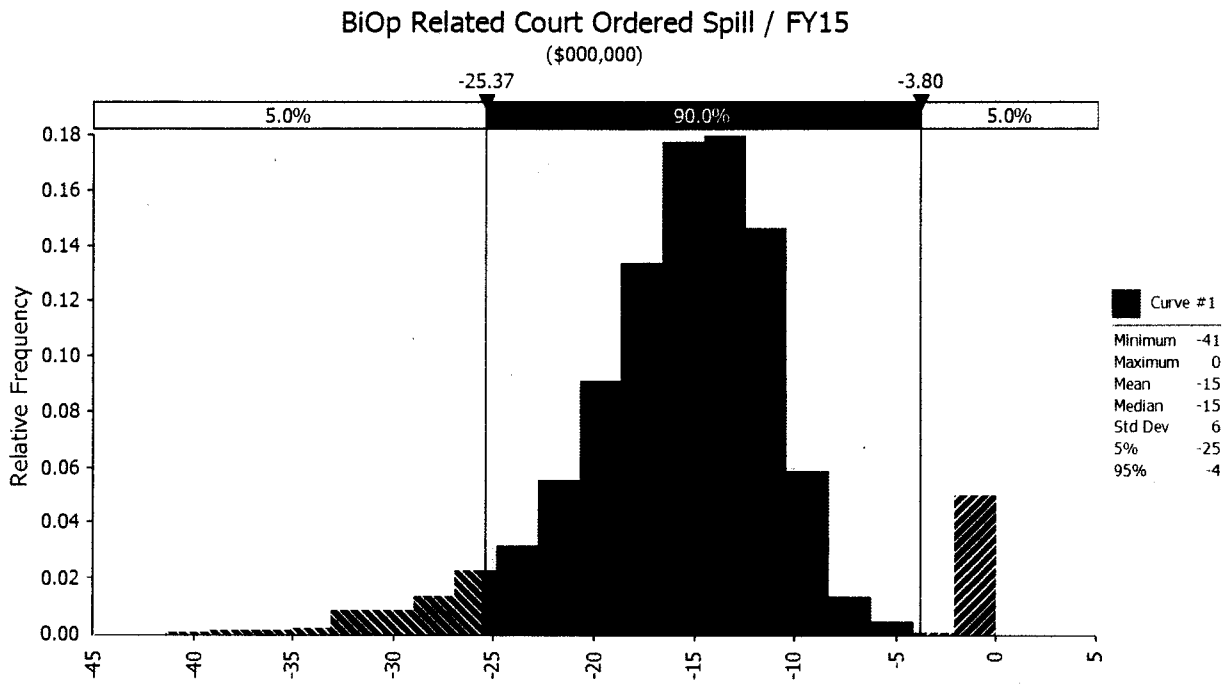
NORM assumes that if court-ordered spill is required in FY 2014 or FY 2015, the spill requirements will be the same as those that BPA has operated under in FY 2011 and FY 2012. NORM applies 3,200 games of monthly AURORA prices to the monthly generation difference between assumed spill and court-ordered spill, adjusted for Slice, to calculate 3,200 games of yearly revenue deviations under court-ordered spill. These deviations are calculated for FY 2013 through FY 2015. As BPA is currently subject to court-ordered spill for FY 2013, and this court-ordered spill is already assumed in the net revenue distributions generated by RevSim, NORM applies a 100 percent probability of court-ordered spill to FY 2013. NORM applies a 95 percent probability to each of FY 2014 and FY 2015.

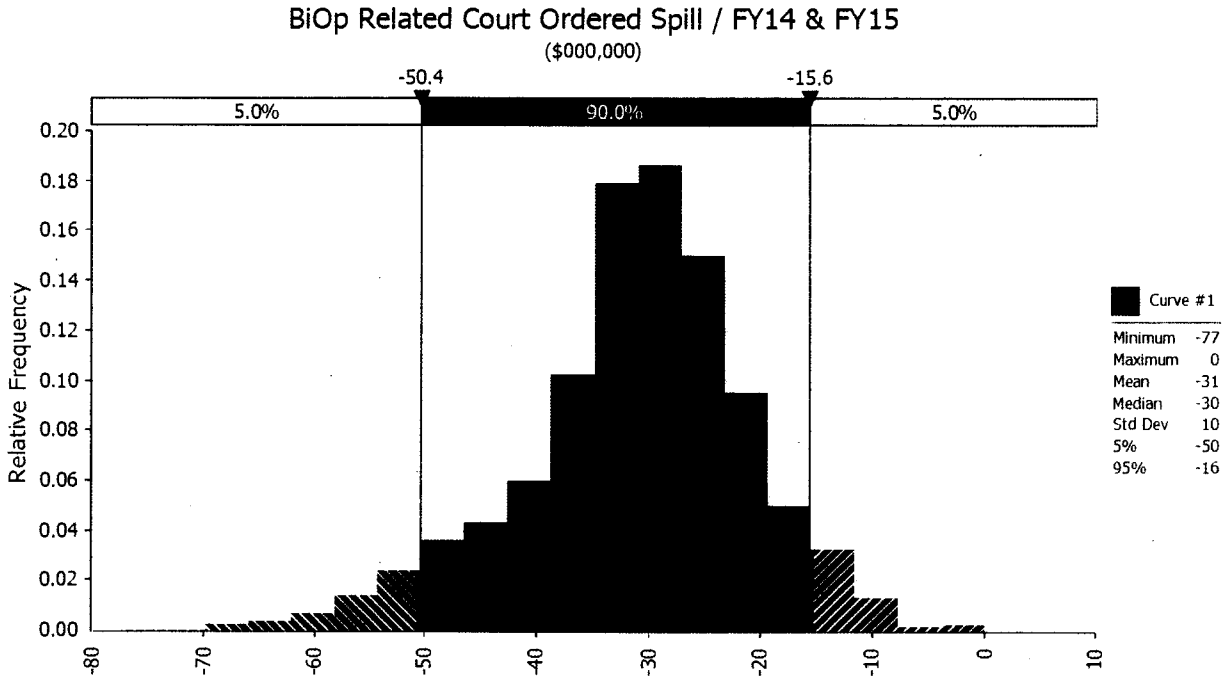
The FY 2013 court-ordered spill revenue deviations calculated in NORM are supplied to ToolKit only as NFB Event adjustments that increase the CRAC Cap for the CRAC applicable to FY 2014. The FY 2014 and FY 2015 court-ordered spill revenue deviations are supplied to ToolKit as revenue and cash adjustments as well as adjustments to the CRAC Cap.

The Court-Ordered Spill risk results in an expected value net revenue impact in the risk assessment of $0 for FY 2013, $15.9 million for FY 2014, and $15.3 million for FY 2015. Documentation Figure 24 shows the distributions for Court-Ordered Spill Risk.

Figure 24: BiOp Related Court Ordered Spill Revenue Distributions




BiOp Related Court Ordered Spill / FY15
($000,000)
-25.37
-3.80
5.0%
90.0%
5.0%
Relative Frequency
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
5
Curve #1
Minimum -41
Maximum 0
Mean -15
Median -15
Std Dev 6
5% -25
95% -4


BiOp Related Court Ordered Spill / FY14 & FY15
($000,000)
-50.4
-15.6
5.0%
90.0%
5.0%
Relative Frequency
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-80
-70
-60
-50
-40
-30
-20
-10
0
10
Curve #1
Minimum -77
Maximum 0
Mean -31
Median -30
Std Dev 10
5% -50
95% -16

3. HYDRO REGULATION ASSUMPTIONS 117

3.1 HYDSIM Hydro Regulation Study Assumptions for 2014 and 2015 118

STUDY NUMBER: 12_RateCase14_final & 12_RateCase15_final

Requested By: BPA Rates Process

Due Date: May 1, 2013

Purpose of Study: This is an 80-year continuous study of the system operation for the final proposal BP-12 Rate Case for FY 2014 and FY 2015.

Study Directories: **DOP Step:** Q:\RATES\12_RateCase14_final\DOP14\TSR80_FCST & Q:\RATES\12_RateCase15_final\DOP15\TSR80_FCST

AER Step: Q:\RATES\12_RateCase14_final\AER & Q:\RATES\12_RateCase15_final\AER

OPER Step: Q:\RATES\12_RateCase14_final\OPERfinal & Q:\RATES\12_RateCase15_final\OPERfinal

Name of Regulator: Jennie Tran/Kim Fodrea

The Rate Case HYDSIM studies are run in three steps or layers. The first step determines the Canadian Treaty operations; the second step includes those Treaty operations and adds a layer that determines the U.S. non-federal operations and an approximation of the federal operations; and the third step includes those operations and adds a layer of fine-tuning to determine the federal operations.

There are two separate 80-year studies—one for Fiscal Year (FY) 2014 (October 2013 through September 2014) and one for FY 2015 (October 2014 through September 2015). For simplicity the two 80-year studies are often referred to as a singular study, and each step is often referred to as a singular step. However, in reality there are two surrogate DOP studies, an AER step for each one, and an OPER step for each one, which is a total of six studies, and these are collectively referred to as the HYDSIM study for the Rate Case.

DOP

- This Step is used to determine the Canadian Treaty project elevations following procedures from the Columbia River Treaty.
- Since the official Detailed Operating Plans (DOP) for Treaty storage operations are typically completed just 1-2 months prior to the operating year, they are not available in time for the rate case study. Therefore, surrogate DOP studies are used to reflect expected study results and determine the Canadian Treaty storage operations for the AER step.
- The surrogate DOP studies start with the official Assured Operating Plans (AOP): AOP14 and AOP15 studies. The surrogate DOP converts the AOP from perfect-knowledge to forecast-based and from operating-year to fiscal-year, and includes all the data updates that are expected to be included in the official DOP studies.
- These updates include plant data from the 2012 PNCA data submittal, 80-year 2010-level Modified Streamflow data, and the most recent flood control data provided by the Corps of Engineers.
- The study begins on October 1, 1928, and ends on September 30, 2008.

AER STEP

- This AER Step is used to determine the project minimum storage elevations using load equal to the 2012 operating year (OY12) Firm Energy Load Carrying Capability (FELCC) and unlimited secondary market. Minimum elevations from the AER Step are input into the Operational Step.
- This is a **continuous** 80-year study based on the OY12 PNCA data submittal.
- The Coordinated System generation does not include the Tacoma projects, Brownlee, Oxbow, and Hells Canyon.
- **Streamflow Data** are from "Modified Streamflows 2010 Level of Irrigation". They contain estimated irrigation depletions from the year 2010. (See "2010 Level Modified Streamflow: Seasonal Volumes and Statistics, 1928-2008" and "2010 Level Modified Streamflow, 1928-2008" both dated August 2011.) Adjustments to these 2010 level modified stream flows are made in this study according to the Bureau of Reclamation's updated **Grand Coulee pumping schedule** for the Columbia Basin Project in their February 1, 2012, preliminary PNCA data submittal for OY13 (since OY12 data had unusual canal maintenance scheduled in March).
- **Plant Data** are from the PNCA plant data for operating year 2012 (OY12) for all projects.
- **Loads** are from the FELCC OY12 Critical Period study run by the Northwest Power Pool (NWPP) for the PNCA. The NWPP study has a one-year critical period (August 16, 1936 through March 31, 1937). Thus, only one year of FELCC values are used for all water conditions. This study reflects coordination between PNCA parties in meeting PNCA FELCC. Therefore, generation from projects owned by non-PNCA parties (Brownlee, Oxbow, Hells Canyon, and Canadian projects) are not used to meet PNCA FELCC in these studies. Also, in this study the generation from Tacoma projects is not included in the PNCA Coordinated System FELCC computation. The PNCA hydro FELCC includes Hydro-Independent generation from 1936-37 so BPA revises the FELCC to reflect the Hydro-Independent generation for each of the 80 years and uses this modified FELCC as the hydro-residual load required for this study. There is no limit assumed in the secondary market, which is consistent with PNCA studies.
- **Unit Outages** for all projects are from the PNCA OY12 data.
- **Initial Contents** for all projects came from the September 30, 1929, storage ending content from the final Rates study for 2007 (Q:\RATES\06\04RATE_07), except Mica, Arrow, Duncan projects are initialized to the content from the surrogate DOP studies. (Q:\TREATY\DOP14\TSR80_FCST_oy13gclpump and Q:\TREATY\DOP15\TSR80_FCST). The initial conditions do not significantly affect the study results since this is a continuous study.
- **Critical Rule Curves** (CRC) are in accordance with PNCA 2012 adopted system critical rule curves where the 1st year critical rule curve = OY12 CRC1; 2nd year = empty; 3rd year = empty; and 4th year = empty.
- **Flood Control Rule Curves**, also known as Upper Rule Curves (URC), are the highest contents allowed for each reservoir and supersede all other reservoir elevation and content operating objectives. The curves are based on: forecasts (not actuals); no shift to Grand Coulee; a ratio of 3.6/4.08 Arrow/Mica split; and variable flood control (VARQ) at Hungry Horse and Libby. They were provided by the Corps of Engineers to BPA in April 2010 for 1929-1998. The 1999-2008 flood control data were provided by the Corps of Engineers on January 2012. These flood control curves include the variable flood control in December at Libby, BC Hydro's updated storage reservation diagram for Duncan, a 1600 cfs minimum flow at Dworshak. (The unit 'cfs' is a common measure of flow, cubic feet per second.) The Mica, Arrow, and Duncan flood control requirements are from the TSR DOP14 study. (The Corps of Engineers provided flood control data for 1929-98 on July 2010 and 1999-2008 on Jan 2012 for DOP14 study). The flood control curves for Coulee are adjusted for the amount of storage capability available below the URC on April 30 each year for Mica, Arrow, and Duncan to more closely reflect the methodology used in real-time operations. BPA adjusts the flood control curves to shift some of Dworshak's requirement to Grand Coulee when possible.

- **Variable Energy Content Curves** (VECCs) are calculated using OY12 Power Discharge Requirements (PDR's), distribution factors, and forecast errors, which are used in PNCA planning. The Grand Coulee ECC lower limits are 1225 feet (420.5 ksfd) January through April 30 and 1240 feet (843.9 ksfd) in May. (The unit 'ksfd' is a volume of water equal to 1000 cfs for one day.) The Canadian projects' TSR DOP14 VECCs are based on forecasts, the ratio of 3.6/4.08 Arrow/Mica split, non-shifted flood control, and VarQ flood control at Hungry Horse only. The VECCs for the Federal projects are based on the 80-year volume forecasts.

Project Specific Data:

- **Mica, Duncan, and Arrow** are fixed to the 80-year surrogate DOP14 and DOP15 studies run by BPA on February 9 and February 23, 2012, respectively, specifically for the BP-14 Rate Case. Mica data logic in the HYDSIM program is turned off. Mica's minimum storage content is reset to 0.0 ksfd so that drafting below 2295.9 ksfd (normal minimum content) can occur.
- **Libby** operates to meet coordinated system FELCC in October and November with a minimum flow of 4,000 cfs. Libby has a maximum outflow of 4,000 cfs January through April, 25,000 cfs May through August. The 25,000 cfs May through August maximum outflow is powerhouse hydraulic capacity without spill, but a higher outflow including spill can be provided to maintain the required VARQ flood control space. Libby has a minimum outflow of 6,000 cfs June through September. Libby can be drafted to meet FELCC September through November as long as it does not draft below the December Variable URC. When the December forecast at Libby for April through August is less than 5500 KAF, the flood control at Libby in December is 2426.6 feet (1804.7 ksfd), When the forecast is greater than 5900 KAF, the flood control in December is 2411.0 feet (1502.2 ksfd). The flood control data is interpolated between 1804.7 ksfd and 1502.2 ksfd when the forecast is between 5500 and 5900 KAF. Libby does violate the flood control URC at times for Corra Linn's IJC operation. Otherwise, the drafting for flood control space at Libby would actually cause downstream flooding near Corra Linn. January-April, Libby operates to minimum flow (4,000 cfs) or at the flood control URC in attempt to reach the flood control URC on April 15 (as a surrogate for the BiOp's April 10 objective). During May 1 through June 30 Libby operates for Sturgeon and during May 15 through September 30 it operates for Bull Trout. Sturgeon and Bull Trout flow requirements May through July are based on May final April-August Kuehl-Moffit forecast at Libby and are summarized as follows from the PNCA OY12 Corps of Engineers Data Submittal based on the USFWS BiOp dated February 18, 2006, where MAF is one million acre-feet and KAF is one thousand acre-feet of water volume.

Libby May1 Apr-Aug Forecast Volume (MAF)	Sturgeon Flow Volume Provided from Libby (KAF)
<4800	0
4800-5400	800
5400-6350	800-1120
6350-7400	1120-1200
7400-8500	1200
8500-8900	1200-1600
>8900	1600

Libby May1 Apr-Aug Forecast Interval (MAF)	Bull Trout Minimum Flow May15-Sep30 (CFS)
<4800	6000
4800-6000	7000
6000-6700	8000
>6700	9000

Libby can draft below the 2,439 feet (2061.3 ksfd) draft limit to meet the Bull Trout flow objective. In years when the May-1 April through August volume forecast for The Dalles is less than 71.8 million acre feet (MAF), which is the lowest 20th percentile, the project attempts to operate along a computed straight line between June 30 content and a September 30 draft limit of 2439.0 feet (2061.3 ksfd) during July and August to minimize occurrences of a second peak flow in the summer. In years when the forecast is greater than or equal to 71.8 MAF the September 30 draft limit is 2449 feet (2280.3 ksfd). However, due to minimum flow for sturgeon and bull trout, the project often operates below the computed straight line.

- **Hungry Horse** operates to meet the following minimum flow requirements at the project and at Columbia Falls as shown in the PNCA data submittal. The minimum flows are determined each month based on the January, February, and March forecasts of April-August streamflow volumes. The March forecast also determines the minimum flows for April through December.

Hungry Horse Apr-Aug Forecast (KAF)	Hungry Horse Minimum Flow (CFS)	Columbia Falls Minimum Flow (CFS)
<1190	400	3200
1190-1790	400-900	3200-3500
>1790	900	3500

Hungry Horse will draft to 3549.2 feet (1377.7 ksfd) for winter flood control and Chum flow in December. However, due to the minimum flow requirement at Columbia Falls, Hungry Horse often operates below 3549.2 feet in December. From January through March, Hungry Horse operates between the fish VECC (aka Variable Draft limit to assure 75% chance of filling to April flood control elevation) and the VarQ flood control elevation except in periods when minimum flow requirements draft the project deeper. The fish VECCs are calculated using assumed inflows that are exceeded 75 percent of the time, the minimum outflow, and the requirement to be at flood control elevation on April 10. Hungry Horse operates to the lower of 3545 feet (1330.2 ksfd) or VarQ flood control upper rule curve in April. In May-June, Hungry Horse operates on flood control when possible but drafts below flood control to meet minimum flows when necessary. In years when the May 1 April-August volume forecast for The Dalles is less than 71.8 MAF (20th percentile), the project operates along the computed straight line between June 30 content and a September 30 draft limit of 3540.0 feet (1275.0 ksfd) during July and August to minimize occurrences of a second peak flow in the summer. In years when the July final January-July volume forecast for The Dalles is greater than or equal to 71.8 MAF (20th percentile), the project operates along the computed straight line between June 30 content and a September 30 draft limit of 3550.0 feet (1386.7 ksfd) during July and August to minimize occurrences of a second peak flow in the summer. The maximum discharge at Hungry Horse is 9,000 cfs during September through April 1-15, and 11,956 cfs in April 16-30 through August 31, unless the URC causes more discharge.

- **Albeni Falls** operates at 2062 feet (559.1 ksfd) from June through August, 2061.5 feet (535.7 ksfd) in September, 2056 feet (279.0 ksfd) in October, 2055 feet (234.7 ksfd) November through March, 2056 feet (279.0 ksfd) in April, and 2060 feet (465.7 ksfd) in May.
- **Grand Coulee** operates to meet FELCC September through December subject to the draft limits of 1283 feet (2332.2 ksfd) in September and October, 1275 feet (2026.8 ksfd) in November, and 1270 feet (1843.0 ksfd) in December. January through March, Coulee can be drafted to the higher of winter draft limits [1260 feet (1492.2 ksfd), 1250 feet (1155.8 ksfd), 1240 feet (843.7 ksfd), respectively] or the Biological Rule Curve (fish VECC). The fish VECC reflects the expected April 10th URC and storage needed for the appropriate Vernita Bar minimum flow requirement. Grand Coulee is then operated to these minimum storage points. The fish VECCs are calculated using assumed inflows which are exceeded 85 percent of the time, perfect foreknowledge of the minimum outflow, and the requirement to be at VARQ flood control elevation on April 10. On April 15, Coulee operates on flood control. From April 30 through May, Grand Coulee may be drafted to the lower of flood control or 1280 feet (2215.5 ksfd) to

support Priest Rapids and McNary flow augmentation targets. In June, Grand Coulee operates to 1288 feet (2532.0 ksfd) or flood control elevations. In July, Grand Coulee has a draft limit of 1285 feet (2411.4 ksfd) to support Priest Rapids and McNary flow augmentation targets. In August 1-15, the draft limit for BIOP flow augmentation is 1280 feet (2215.5 ksfd) if July 1 April-August runoff at The Dalles is less than 92 MAF; otherwise the draft limit is 1282 feet (2293.5 ksfd). In August 16-31, the draft limit is 1278 feet (2139.8 ksfd) if the July 1 forecast April through August volume runoff at The Dalles is less than 92 MAF; otherwise the draft limit is 1280 feet (2215.5 ksfd). At-site minimum flow is equal to 30,000 cfs. Grand Coulee is subject to a draw down limit of 1.5 feet per day when Coulee is above 1260 feet, 1.3 feet per day when Coulee between 1260 and 1240 feet, and 1.0 feet per day when Coulee is below 1240 feet. During the flow augmentation period, Grand Coulee will release no more water than necessary to meet the minimum flow requirements.

- **Vernita Bar** minimum flows for December through May vary by water condition, with minimum flows established as the lower of a) 68 percent of the largest of the October or November flow at Wanapum or b) 70,000 cfs. Values less than 70,000 cfs are rounded to the nearest 5,000 cfs. The minimum protection level flow at Vernita Bar in any period will be no less than 36,000 cfs. These Vernita Bar flow requirements are modeled as requirements at Priest Rapids, and Grand Coulee will draft to meet them.
- **Priest Rapids** has a flow augmentation target of 135,000 cfs for Steelhead April 10 through June 30. From April 1-9 the minimum flow for Priest Rapids is the same as the Vernita Bar minimum flow.
- **Upper Snake** reservoirs and river reaches above Brownlee are not simulated in this study. Upper Snake operations are embedded in the Brownlee inflow datas, as described in the 2010 Level Modified Streamflow documentation.
- **Brownlee** operates to the 70-year rule curves provided to BPA from the Northwest Power Pool on March 15, 2007. They are 432.1 ksfd in Au1, 380.7 ksfd in Au2, 293.8 ksfd in Sep, 491.7 ksfd in Nov, 436.3 ksfd in Dec, 385.4 ksfd in Jan, 484.7 ksfd in Jun and Jul. The rule curves vary between 226.0 ksfd, 113.2 ksfd, 62.9 ksfd, 0.0 ksfd and 74.7 ksfd to full content of 491.7 ksfd in Oct, Feb, Mar, Ap1, Ap2 and May, respectively. Since this is an 80-year study, the last ten years of Brownlee operations are based on a similar water year from the 70-year data.
- **Dworshak** is on minimum flow of 1500 cfs or at flood control elevations in all periods with the exception of July-September. Dworshak's outflow is limited to 14,000 cfs in July-August except when exceeded to meet the URC-- the maximum flow is 25,000 cfs for flood control operations. During the July-August flow augmentation period, Dworshak will release no more water than necessary to meet the Lower Granite flow target, though the target is rarely met and instead Dworshak most often operates to target elevations based on a straight-line draft between end of June and end of August target elevations: usually 1600 feet (1016 ksfd) June 30, 1570 feet (756 ksfd) July 31, 1554 feet (631 ksfd) August 15, and 1535 feet (497.0 ksfd) August 31. Dworshak is drafted to 1520 feet (395.8 ksfd) on September 30.
- **Lower Snake projects operate at MOP** (minimum operating pool) in accordance with the PNCA data submittal. As identified in the 2008 BiOp, the Corps operates Little Goose, Lower Monumental, and Ice Harbor within one foot of minimum operating pool (MOP) during the period from approximately April 3 through August 31. Lower Granite operates within one foot of MOP from approximately April 3 through November 15 (Ap1-Oct in HYDSIM modeling). MOP for Lower Granite, Little Goose, Lower Monumental and Ice Harbor is elevation 733 (225.0 ksfd), 633 (260.5 ksfd), 537 (180.5 ksfd) and 437 feet (193.4 ksfd), respectively. During the rest of the year Lower Granite, Little Goose, Lower Monumental and Ice Harbor operate at elevation 738 (245.8 ksfd), 638 (285.1 ksfd), 540 (190.1 ksfd) and 440 feet (204.8 ksfd), respectively.
- **Turbine operations** at the four lower Snake River projects (Lower Granite, Little Goose, Lower Monumental and Ice Harbor) and the four lower Columbia River projects (McNary, John Day, The Dalles and Bonneville) are within **1 percent of peak efficiency** March through November. This requirement is reflected in the HYDSIM hydro availability file.

- **Spill for Fish Passage** is included at the eight federal mainstem projects (Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville) based on the OY10 PNCA data, summarized below. The spill is limited at times by 120% TDG Gas Caps (shown in table at end of this document) and minimum turbine flow requirements (shown in the following table).

- **Juvenile Passage Spill and Total Dissolved Gas Caps from OY12 PNCA Planning**

SPILL CRITERIA FOR PNCA OY2012 (Feb 1, 2011 Submittal Table 9, A-23)					
	Spill	**Min Turb**	**Days**	**Hour Ending**	**Notes**
Lower Granite	20 kcfs 18 kcfs	11.5 kcfs	Apr 3 - May31; Jun 1 - Aug 15	All hours	Gas Cap: Ap1-Ap2: 30 kcfs; May 28 kcfs; June 30 kcfs; Jul-Au1: 28 kcfs
Little Goose	30% flow	11.5 kcfs Min Turbine; 8.4 kcfs Min Spill	Apr 5 - May 31, Jun 1 - Aug 15	All hours	Gas Cap: Ap1-Ap2: 30 kcfs; May 28 kcfs; June 30 kcfs; Jul-Au1: 28 kcfs
Lower Monumental	gas cap; 17 kcfs	11.5 kcfs	Apr 7 - May 31, Jun 1 - Aug 15	All hours	Gas cap: Ap1: 26 kcfs; Ap2: 25 kcfs; May 22 kcfs; Jun 19 kcfs; Jul-Au1: 24 kcfs
Ice Harbor	30% flow vs 45 kcfs day/gas cap night	9.5 kcfs	Apr 7 - Aug 17	All hours 13 hrs day/ 11 hrs night	.
McNary	40% flow	50 kcfs	April 10 - Jun 15	All hours	Gas Cap: Ap1-Ap2: 117 kcfs; May 122 kcfs; Jun 125 kcfs ; Jul 138 kcfs; Au1-Au2: 148 kcfs
	50% flow		Jun 16 - Aug 31	All hours	
John Day	30% vs 40% flow	50 kcfs Min Turbine; 25% min spill	Apr 10 - Jun 15	All hours	Gas Cap: Ap1: 96 kcfs; Ap2: 90 kcfs; May-Jul 95 kcfs; Au1-Au2: 98 kcfs
	30% vs 40% flow		Jun 16 - Aug 31		
The Dalles	40% flow	50 kcfs	Apr 10 - Aug 31	All hours	Gas Cap: Ap1: 124 kcfs; Ap2: 131 kcfs; May 132; Jun 137; Jul 139 kcfs; Au1-Au2: 125 kcfs
Bonneville	lower of gas cap or 100 kcfs	30 kcfs Min Turbine: 50 kcfs Min Spill	Apr 10 - Jun 15	All hours	Gas Cap: Ap1: 106 kcfs; Ap2: 108 kcfs; May: 109 kcfs; Jun: 98 kcfs; Jul: 111 kcfs; Aug1: 116 kcfs; Aug2: 120 kcfs
	95 kcfs		Jun 16 - Aug 31	18 hrs Day/ 6 hrs night	
			Aug 1 - Aug 31	16 hrs Day/ 8 hrs night	

LWG = Lower Granite; LGS = Little Goose; LMN = Lower Monumental; IHR = Ice Harbor; MCN = McNary; JDA = John Day; TDA = The Dalles; BON = Bonneville

- **Chum Flow Objectives at Bonneville** are from November 1 through April 10 and estimated at 125,000 cfs in the PNCA data submittal. Grand Coulee drafts for this Chum flow requirement with draft limits of 1275 feet (2027.1 ksfd) in November and 1270 feet (1843.4 ksfd) in December.
- **McNary Flow Targets** for April 10 through June 30 are 220,000 to 260,000 cfs based on The Dalles April 1, April - August volume runoff forecasts. When the forecast is 80 MAF or less the target is 220,000 cfs, and when the forecast is 92 MAF or greater the target is 260,000 cfs. Straight-line interpolation determines the flow targets for volume forecasts between 80 and 92 MAF. McNary summer flow targets are 200,000 cfs in July and August. Grand Coulee drafts for this flow augmentation target, subject to draft limits.
- **Lower Granite Flow Targets** also vary depending on the forecast. When Lower Granite April 1, April - July runoff forecast is less than 16 MAF, then the April 3 through June 20 flow target is 85,000 cfs, and the June 21 through August 31 is 50,000 cfs. When the April 1 Lower Granite

April through July forecast is greater than 20 MAF, the April 3 through June 20 target flow is 100,000 cfs. In June 21 through August 31, when the forecast is greater than 28 MAF, the flow target is 55,000 cfs. The spring flow targets are interpolated for forecasts between 16 and 20 MAF, and the summer flow targets are interpolated for forecasts between 16 and 28 MAF. Dworshak drafts to meet this flow objective, subject to draft limits.

- **John Day** is operated at 262.5 feet (127.8 ksfd) from April through September. From October through March, John Day operates to elevation 265 feet (191.0 ksfd).
- **The Dalles** is modeled as a reservoir instead of a run-of-river project to eliminate a minor programming bug in HYDSIM's energy calculation. The new reservoir input data come from PNCA OY12.
- **Bonneville** second powerhouse corner collector is modeled as "other spill" in HYDSIM, using the "other spill" data from PNCA OY12.
- **Spill at non-Federal projects** is summarized below from OY12 PNCA planning data. Wells dam spills the percentage shown below if Chief Joseph's outflow is less than 140,000 cfs; otherwise Wells spills 10,200 cfs April 12 through August 26.

Non-Federal Spill for Fish (Percent of Total Outflow or cfs)

PROJECTS:	Apr1	Apr2	May	Jun	Jul	Aug1	Aug2
Wells (%)	1.7	6.5	6.5	6.5	6.5	6.5	4.5
Rocky Reach (%)	0.0	0.0	0.0	6.3	9.0	9.0	2.8
Rock Island (%)	0.0	8.7	10.0	18.7	20.0	20.0	6.3
Wanapum (cfs)	22,000	22,000	22,000	22,000	22,000	22,000	13,000
Priest Rapids(cfs)	29,800	29,800	29,800	29,800	29,800	29,800	29,800

- **Kootenay Lake** is operated as necessary, up to free flow, to maintain the lake level below the IJC rule curve and the calculated "allowable elevation at Queens Bay". This is implemented using the 5-step method developed by BPA and the Corps. After August 31, the lake level may rise to elevation 1745.32 at the Queens Bay gage. This maximum elevation at Queens Bay is in effect through January 7. After January 7 the lake will be lowered to elevation 1744 on February 1, elevation 1742.4 on March 1, and 1739.32 on May 1. From June 1 through August 31, after the lake exceeds elevation 1739.32 feet at the Queens Bay gage, the lake shall be operated using the "allowable elevation" calculation to determine the Queens Bay maximum allowable elevation until the elevation at the Nelson gage drafts back to elevation 1743.32 feet.

OPER STEP

- All AER step criteria apply in the OPER step unless specifically amended below.
- **Loads** in the OPER step are the 2014 and 2015 Coordinated System firm residual hydro loads from BPA's LORA Inventory Study (Token S107) on March 7, 2013. These residual hydro loads are the total coordinated system firm load less all the other firm non-hydro resources. A variable secondary market limit based on an AURORA market analyses is also included in every period of every year. The secondary market limit is calculated as necessary to force the HYDSIM 'overgen' spill to equal the spill due to lack of market estimated by AURORA, except in periods when Grand Coulee is able to store water and avoid spill. The Coordinated System independent hydro generation from LORA Inventory Study (Token S107) is also used in this study to develop the residual hydro load.
- **Availability Factors** are used in HYDSIM to simulate unit outages and units held for reserve requirements. Unit outages are based on data provided by PGF. The availability factors are calculated from the 5-year average of 2007-2011 actual outages for all federal projects except Grand Coulee and Chief Joseph. Chief Joseph availability factors are based on the 2-year average of 2010-2011 actual outages. Grand Coulee availability factors are based on the year 2010 actual outages with two large 805-MW units out of service in all months. The estimates for Grand Coulee availability factors reflect the high levels of outages that are expected during the rate period for runner replacements, major overhaul work, and replacement of governors,

excitors, tranformers, and high-voltage power lines. The following table shows availability factors based on these outage assumptions.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Libby	78%	94%	100%	83%	84%	78%	80%	96%	100%	98%	78%	82%
Hungry Horse	73%	77%	80%	82%	80%	67%	75%	83%	91%	91%	87%	73%
Albeni Falls	95%	98%	92%	90%	89%	93%	93%	92%	93%	93%	83%	91%
Dworshak	58%	59%	77%	98%	99%	100%	100%	96%	94%	100%	100%	85%
Grand Coulee	65%	70%	66%	69%	70%	63%	67%	68%	67%	62%	55%	60%
Chief Joseph	76%	82%	94%	94%	95%	92%	94%	89%	89%	87%	96%	87%
Lower Granite	62%	58%	67%	71%	83%	82%	82%	86%	89%	76%	52%	59%
Little Goose	78%	81%	87%	88%	82%	81%	86%	87%	92%	85%	66%	75%
Lower Monumental	74%	80%	80%	86%	93%	90%	99%	99%	99%	87%	79%	82%
Ice Harbor	72%	73%	82%	79%	86%	87%	91%	90%	97%	80%	71%	75%
McNary	81%	83%	87%	90%	91%	93%	94%	95%	96%	79%	77%	74%
John Day	82%	85%	84%	88%	90%	85%	85%	92%	92%	91%	85%	85%
The Dalles	89%	88%	92%	89%	90%	89%	87%	92%	93%	90%	84%	88%
Bonneville	74%	74%	74%	78%	78%	80%	83%	83%	83%	78%	73%	74%

- The availability factors are also used to reflect reserve requirements because HYDSIM has no other mechanism to account for *inc* reserves, which require the system to have units available to increase generation within a few minutes. After calculating availability factors based on unit outage information, the availability factors are further decreased to reflect units needed for meeting reserve requirements. The availability factors assume the federal hydro system will provide 89 percent of the estimated reserves required. The availability factors reflect operating contingency reserve requirements at 3 percent of the total control area generation and 3 percent of the total loads. Balancing reserve requirements of 900 MW are also included in the availability factors and are consistent with the estimates provided by Transmission staff assuming the 99.5% level and self-supply. The following table shows availability factors after considering these reserve requirements in addition to the outage assumptions.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Libby	78%	94%	100%	83%	84%	79%	80%	96%	100%	98%	78%	83%
Hungry Horse	72%	77%	81%	82%	79%	68%	75%	83%	91%	91%	88%	72%
Albeni Falls	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	82%	92%
Dworshak	58%	59%	77%	98%	99%	100%	100%	96%	94%	100%	100%	85%
Grand Coulee	56%	61%	61%	63%	64%	55%	59%	58%	57%	54%	52%	56%
Chief Joseph	70%	76%	76%	79%	80%	69%	73%	73%	72%	68%	64%	70%
Lower Granite	41%	49%	57%	61%	73%	76%	66%	69%	72%	61%	42%	39%
Little Goose	55%	72%	77%	78%	72%	76%	71%	72%	75%	70%	55%	54%
Lower Monumental	58%	71%	70%	76%	83%	84%	89%	89%	89%	78%	70%	66%
Ice Harbor	56%	61%	69%	67%	73%	79%	86%	84%	91%	75%	66%	59%
McNary	56%	75%	79%	82%	83%	85%	74%	75%	75%	62%	61%	51%
John Day	74%	76%	76%	79%	81%	81%	75%	82%	82%	81%	76%	77%
The Dalles	66%	80%	83%	80%	82%	85%	61%	65%	66%	64%	59%	65%
Bonneville	55%	64%	64%	68%	68%	73%	67%	67%	67%	62%	59%	55%

- **Initial Contents** for the major federal projects are based on the 70-yr average of September 30 storage ending content from the 08RateCase10_final study.
- **Flood Control Rule Curves** for Grand Coulee are adjusted for the amount of storage capability available below the URC on April 30 each year for Mica, Arrow, and Duncan and are also adjusted to shift some Dworshak flood control space to Grand Coulee when possible while still meeting Dworshak's local flood control requirements and following Corps procedures.
- **Non-federal projects** are run to the resulting contents from the AER step. This allows the federal projects to operate differently without causing the non-federal projects to adjust operations to meet the system load.
- **Bonneville Chum Flow Objectives** are determined each period based on 11.5 or 11.3 feet tailwater elevation requirements below Bonneville November through March and 16.5 feet tailwater in April. Grand Coulee operates to meet the chum flow objectives November though March subject to the draft limits described under Grand Coulee.
- **April 10 URC** objectives are included in the study. The BiOp objective is for the federal reservoirs to be at their April 10 URC elevations each year, as full as possible in preparation for

providing flows to meet the spring flow objectives, although minimum flow requirements and forecast errors can cause projects to miss this refill objective. The objective is for Grand Coulee to operate with an 85 percent chance of reaching the April 10 elevation and for Libby and Hungry Horse to operate with a 75 percent chance. The April 10 objectives are modeled as April 15 objectives in HYDSIM.

- **Lower Granite flow targets** are removed from the OPER step because Dworshak is the only project available to help meet them and other operating requirements determine its operation.

Project Specific Data:

- **Mica, Duncan, and Arrow** are fixed to the 80-year DOP14 and DOP15 studies for 2014 and 2015 rate case studies, respectively with the following additions: 1) One MAF of flow augmentation is stored in January and is released in March in dry years or released in May, June, and July in non-dry years. For whitefish the 1 MAF storage is not allowed to decrease Arrow February or March outflows more than 19,000 cfs below the January outflow. The TSR DOP study is not limited for whitefish, but the 1 MAF storage is not allowed to worsen the operation for whitefish. 2) The trout spawning operation is included at Arrow where April 16 through April 30 flows are at least 15,000 cfs and May and June flows are equal to or greater than the preceding month whenever possible. No more than a 10,000 cfs decrease is allowed in the April through June trout spawning period. 3) Arrow and Duncan balance operations to ensure that both projects are on TSR DOP14 or DOP15 contents by 31 July. 4) Mica balances to the TSR DOP14 or DOP15 contents July-December when Arrow and Duncan can not. 5) The Libby Coordination Agreement (LCA) Provisional Draft is included at Arrow. (The LCA provides an energy benefit to the Canadians as an offset for energy losses caused by Var-Q flood control at Libby.)
- **Duncan** targets outflow of 8,000 cfs to support Cora Linn and Brilliant flows but does not draft below 1,845 feet (316.2 ksfd) in September. Duncan targets 2,000 cfs in October, 2,900 cfs in November, 4,800 cfs in December (to support Kootenay Lake elevation), and 7,000 cfs in January (to support Arrow whitefish operation). Duncan has a minimum flow of 3,000 cfs and 2,000 cfs in February-March, respectively, which often control the operation. In February and March, when not controlled by minimum flows Duncan drafts for power with a draft limit of 1812.5 feet (93.1 ksfd) in February and a maximum elevation of 1807.7 feet (65.3 ksfd) in March. In April, Duncan drafts to empty (elev 1794.2, 0.0 ksfd) unless the March 1 May through July forecast at Duncan is less than 1,480 KAF when Duncan operates to 1,000 cfs outflow in the first half of April and 100 cfs outflow in the second half of April. In May and June Duncan operates to minimum flow of 100 cfs unless the flood control URC requires more discharge. In July and August, Duncan targets the higher of the TSR DOP elevation or 1890 feet (688.2 ksfd).
- **Arrow** stores up to 1 MAF for flow augmentation in January in all years, and releases the 1 MAF (15 percent in May, 15 percent in June, and 70 percent in July) in years with a Feb-1 forecast April through August volume at The Dalles greater than 75.0 MAF. In drier years this storage of up to 1 MAF is released in March. Arrow has a minimum flow of 30,000 cfs in January if the January 1 forecast of April through August volume at The Dalles is less than 75 MAF; otherwise the minimum flow is 20,000 cfs, although in some years the project reaches empty and is unable to provide this minimum flow. The flow augmentation will all be released by July 31 allowing Arrow to be on TSR DOP14 or DOP15 elevation by 31 July. For trout spawning, Arrow outflow operates to minimum flow of 15,000 cfs in April 15, between 15,000 cfs and 25,000 cfs in April 30, between 15,000 cfs and 35,000 cfs in May-June. During April through June the outflow at Arrow can not decline unless the TSR DOP14 or DOP15 balance by June 30 is too negative. Then the outflow is allowed to reduce up to 10,000 cfs in the April through June (trout spawning period). The Outflow at Arrow can be increased in May-June to keep the July discharge below 80,000 cfs. Under the Libby Coordination Agreement (LCA) Arrow is allowed to draft below TSR DOP14 or DOP15 contents from August through December at most two times per year up to 120 ksfd and return all the water by March. (Draft 60 ksfd in July, 30 ksfd in the

first half of August, 30 ksfd in the second half of August, and return all in October. Then draft 120 ksfd in December and return all in March).

- **Non-Treaty Storage Agreement (NTSA):** A total of 3 MAF NTSA storage and release is included in the study. Modeling the NTSA operations required plant data updates at Mica and Arrow to increase their maximum storage contents and their upper rule curves. The study includes the NTSA dry-year operations and spring-summer operations. The NTSA also includes operations driven by price, but this operation is not included in this study due to the complexities of incorporating price-based operating decisions.
    - **For Dry Year NTSA operation**
        - Release ½ MAF from Mica (or Arrow) in November-June in years if the April Final April-August volume forecast at The Dalles is less than 71.8 MAF
        - Store ½ MAF into Mica (or Arrow) in May-June in years if the April Final April-August volume forecast at The Dalles is 91.4 MAF or higher.
        - Water that is stored in May or June should not violate the minimum flow requirements at Priest Rapids, Bonneville, McNary and the Arrow trout/whitefish operation. Water that is released in May or June should not violate the Arrow trout spawning operation.
    - **For Spring-Summer NTSA operation**
        - Store up to 2½ MAF at Mica (or Arrow) in April 16 – June 30 if meeting Arrow Trout operation and exceeding 300,000 cfs outflow at McNary and minimum flow requirement at Priest. Do not store in May-June for years that Arrow's outflow from the DOP study exceeds 80,000 cfs in August. The Canadians would not likely agree to the spring-summer provision when flows are forecasted to be that high.
        - Release in July-August the amount that was stored in April 16 – June 30 at Mica (or Arrow). If the release in July would results in McNary exceeding its flow target, then the release occurs in August without violating the 80,000 cfs maximum flow.
- **Priest Rapids** flow augmentation targets for Steelhead are modeled as 120,000 cfs during April 16-30, and 135,000 cfs in May.
- **Brownlee** drafts to 2062.0 feet (391.5 ksfd) in July, 2059.0 feet (373.5 ksfd) on August 15, 2055 feet (349.4 ksfd) on August 31, 2048.0 feet (309.7 ksfd) in September, and 2050.0 feet (320.4 ksfd) in October. In November, Brownlee operates to meet the flow target of 9,000 cfs at Hells Canyon for IPC Fall Chinook operation, and Hells Canyon only exceeds the 9000 cfs flow when Brownlee drafts more due to the flood control URC. In December Brownlee targets elevation 2070.0 feet (443.2 ksfd) but will draft deeper in order to meet the minimum flow of 9,000 cfs at Hells Canyon. In January Brownlee targets elevation 2060.0 feet but will draft deeper in order to meet the minimum flow of 9,000 cfs at Hells Canyon. In January , Brownlee suppose to draft to 2060.0 ft (379.5 ksfd) but most often fill to the AER ending elevation of 2061.0 feet (385.4 ksfd) or the flood control URC,. In February-May Brownlee maintains full content of 491.7 ksfd (2077.0 ft) except when flood control URC or minimum flow at Hells Canyon of 9,000 cfs requires deeper drafts. In June Brownlee targets full except when a draft is needed to maintain a minimum flow of 7,000 cfs at Hells Canyon.
- **Dworshak** has a maximum discharge of 17,000 cfs in all periods to reflect typical actual operations and avoid exceeding 110 percent TDG level. February through June outflows are reshaped to reduce forced spill. July and August outflows are smoothed to reflect typical actual operations by using 11,000 cfs minimum in July and August 1-15, and a maximum 25 percent reduction from the first half of August to the second half of August.
- **Libby** has a September minimum flow of 6,000 cfs. In the fall, Libby minimizes October draft and maximizes December draft by targeting outflow of 4,000 cfs in October-November, and limiting outflow to 20,000 cfs maximum October-December. Libby can release above 4,000 cfs in October-November if the outflow in December exceed 20,000 cfs. Libby's outflow in May is based on a VarQ allowable refill calculation as used in actual operations. Libby's June through September operation includes the sturgeon pulse, bull trout minimum required flows, and summer flow augmentation according to the Montana Proposal.

- **Hungry Horse** will violate the flood control upper rule curve to keep its maximum outflow at 20,000 cfs or below. Hungry Horse has a maximum elevation of 3558 feet (1480.1 ksfd) in June. Hungry Horse's summer draft is shaped to provide flat flows July through September where possible.
- **Albeni Falls** drafts to 2053 feet (146.1 ksfd) by November 30, maintains this elevation through April 15, then fills to 2056.0 feet (279.0 ksfd) by April 30, and fills to 2060.0 feet (465.7 ksfd) in May.
- **Kerr** operates to elevation 2891 feet (488.6 ksfd) in October and November, 2888 feet (302.8 ksfd) in December, 2886.5 feet (211.0 ksfd) in January, 2886.4 feet (204.9 ksfd) in February, 2887 feet (241.5 ksfd) in March, 2884.8 feet (107.9 ksfd) in April 15, 2884.1 feet (65.7 ksfd) in April 30, 2890 feet (426.3 ksfd) in May, full at 2893 feet (614.7 ksfd) June through August, and 2891.8 feet (538.8 ksfd) in September. This operation is based on actual operations in recent past years.
- **Grand Coulee** operates at elevation 1285 feet (2411.4 ksfd) in September and between 1283 feet (2332.0 ksfd) and 1288 feet (2532.0 ksfd) in October. Grand Coulee can not fill above 1288 feet (2532.0 ksfd) in November-December and 1287 feet (2491.4 ksfd) in January and February. Grand Coulee drafts to support the Chum flow target January through March subject to the draft limits of about 10 feet below the computed fish VECC. Grand Coulee can draft further if needed to support the Vernita Bar flow requirement at Priest Rapids. The deepest draft limits at Grand Coulee for Vernita Bar minimum flow requirement and for Steelhead and Chum flow targets are: 1270 feet (1843.4 ksfd) in December, 1260 feet (1489.1 ksfd) in January, 1250 feet (1155.8 ksfd) in February, 1240 feet (843.8 ksfd) in March-May. In all periods, Coulee can not draft below 1228 feet (500.1 ksfd) unless it is on flood control operation. Coulee operates to the lower of 1288 feet (2532.0 ksfd) or flood control in June. July through August 15, Grand Coulee can not fill above 1288 feet (2532.0 ksfd). Beside drafting in April through June for WCRWMP, the Washington Columbia River Water Management Program (WCRWMP) allows Coulee to draft an additional 1 foot in August; therefore, in August 1-15, the draft limit for BIOP flow augmentation is 1279 feet (2177.7 ksfd) if July 1 April-August runoff at The Dalles is less than 92 MAF; otherwise the draft limit is 1281 feet (2254.4 ksfd). In August 16-31, the draft limit is 1277 feet (2101.9 ksfd) if the July 1 forecast April through August volume runoff at The Dalles is less than 92 MAF, otherwise the draft limit is 1279 feet (2177.7 ksfd). Also, the Bureau performs maintenance during the spring on the spillway drum gates at least one year of every three years, at least two of every five years, and at least three of every seven years. For modeling, this maintenance requires a maximum Lake Roosevelt elevation of 1277.5 feet (2120.9 ksfd) at the end of February (so as not to exceed the 1.5 feet/day draft limit in drafting to 1255 feet (1319.7 ksfd) by March 15, and then elevation 1255 feet (1319.7 ksfd) is held through April 30. After meeting all modeling requirements, Grand Coulee's January through March operation is re-evaluated to put more generation in January and February or evenly distribute the secondary energy when possible without violating the one foot per day draft rate limit and other constraints in the study.
- **Columbia Basin Irrigation Project Pumping (Banks Lake)** is captured through the PNCA data submittal estimates of pumping, which are based on the average of the past five years actual pumping and include the equivalent of 5 feet (65.5 ksfd) flow augmentation in August and the associated increase in pumping the following March-May period to return those 5 feet to Banks Lake. In years when this flow augmentation is not needed to meet the McNary flow augmentation target of 200,000 cfs, the pumping is increased by the equivalent of 5 feet in August and the following year's March-May pumping is decreased.
- **Juvenile Fish Bypass Spill** for the federal projects are summarized in the following tables. Forecasts of less than 12.8 MAF April through June at Lower Granite are used to estimate when average spring flows are likely less than 65,000 cfs and less spill will be provided at the three Snake River projects. There are 15 years in the 80-year study that meet this criterion and do not include planned spill for fish passage at the three Snake River projects.

Spill Criteria for BP14 Rate Case Final Proposal					
Projects	**Spill**	**Min Turb**	**Days**	**Hour Ending**	**Notes**
Lower Granite	20 kcfs(Apr3-Jun4) 18 kcfs(Jun5-Aug7)	11.5 kcfs	Apr 3 - May 6, May 21 - Jun 4; Jun 5 - Aug 7	All hours	Also see spring transport criteria. Some years have no spring spill at the three Snake River transport projects.
Little Goose	30% of total flow	11.5 kcfs	Apr 5 - May 6, May 21 - Aug 12	All hours	
Lower Monumental	gas cap(Apr7-Jun4) 17 kcfs(Jun5-Aug15)	11.5 kcfs	Apr 7 - May 6, May 21 - Jun 4; Jun 5 - Aug 15	All hours	
Ice Harbor	35% of total flow	9.5 kcfs	Apr 7 - Jun 15	All hours	All years
	30%of total flow		Jun 16 - Aug 16		
McNary	40% of total flow	50 kcfs	April 10 - Jun 15	All hours	All years
	50%of total flow		Jun 16 - Aug 31		
John Day	30% of total flow	50 kcfs	Apr 10 - 19	All hours	All years
	30% of total flow		Apr 20 - Jul 20		
	30% of total flow		Jul 21 - Aug 31		
The Dalles	40% of total flow	50 kcfs	Apr 10 - Aug 31	All hours	All years
Bonneville	100 kcfs	30 kcfs	Apr 10 - Jun 15	All hours	All years
	alternating, every 2 days: 85 kcfs day / 121 kcfs night 95 kcfs		Jun 16 - Aug 31	All hours; day/night spill hours vary	Jun1-30 day hrs are 0430-2130; Jul1-31 day hrs are 0430-2200; Aug1-15 day hrs are 0500-2145; Aug16 31 day hrs are 0500-2030.

Summary: 2008 BiOp Snake River spring spill / max transport decisions.

Lower Granite Dam				
	Apr1	Apr2	May	June*
Seasonal Average Flows < 65	no spill	no spill	no spill	spill Jun1-30
Seasonal Average Flows > 65	spill Apr3-15	spill Apr16-30	spill May1-6,21-31	spill Jun1-30
Little Goose Dam				
	Apr1	Apr2	May	June*
Seasonal Average Flows < 65	no spill	no spill	no spill	spill Jun1-30
Seasonal Average Flows > 65	spill Apr5-15	spill Apr16-30	spill May1-6,21-31	spill Jun1-30
Lower Monumental Dam				
	Apr1	Apr2	May	June*
Seasonal Average Flows < 65	no spill	no spill	no spill	spill Jun1-30
Seasonal Average Flows > 65	spill Apr7-15	spill Apr16-30	spill May1-6,21-31	spill Jun1-30

* Fed agreement that summer spill criteria starts June 5th on average.

- **Overgeneration Spill Priorities and TDG Gas Caps** are summarized in the following table. One kcfs equals one thousand cfs. Spill up to the TDG gas levels in the order listed below to avoid generation levels that exceed the secondary market limit. This is called 'overgen spill' in HYDSIM. First, starting with McNary, spill all projects up to the 120 percent TDG gas levels in the order shown below, then spill all projects up to the 125 percent TDG gas levels in the order shown, and then up to 130 percent, etc. A variable secondary market limit is calculated in HYDSIM as needed to force the 'overgen' spill in each period to equal the estimated energy spilled due to lack of market from the AURORA model. The following are rough approximations of the typical amounts of spill that cause TDG to reach the specified percentage levels. (In actual operations, the spill at a certain gas level can vary significantly and operations are adjusted as necessary to manage to the appropriate gas level at the time.)

	120%	**125%**	**130%**	**135%**
LWG:	40 kcfs	70 kcfs	90 kcfs	150 kcfs
IHR:	97 kcfs	125 kcfs	180 kcfs	240 kcfs
LGS:	27 kcfs	80 kcfs	150 kcfs	250 kcfs
BON:	120 kcfs	150 kcfs	225 kcfs	270 kcfs
MCN:	138 kcfs	230 kcfs	310 kcfs	450 kcfs
JDA:	94 kcfs	240 kcfs	450 kcfs	600 kcfs
TDA:	128 kcfs	250 kcfs	360 kcfs	600 kcfs
LMN:	23 kcfs	95 kcfs	180 kcfs	250 kcfs
CHJ[1]:	150 kcfs	200 kcfs	300 kcfs	450 kcfs
GCL[2]:	30 kcfs	75 kcfs	120 kcfs	170 kcfs
GCL[3]:	10 kcfs	20 kcfs	35 kcfs	55 kcfs

[1] 50 kcfs minimum turbine flow for CHJ included during 'overgen' spill.
[2] During all periods except May.
[3] During May when the reservoir is more likely below the spillway crest elevation 1260 feet and the regulating outlets must be used to spill.