



## Department of Energy

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

PUBLIC AFFAIRS

September 22, 2010

In reply refer to: DK-7

Richard van Dijk  
Another Way BPA

Ex 6

**RE: BPA-2010-01815-F**

Dear Mr. van Dijk:

This is a final response to your request for information 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:**

All internal documentation (emails, meeting notes, presentations and individual worksheets) that mitigate the need for de-rating the proposed I-5 line if built using the existing Right of Way known as segments 9 and 25 on the project map. The documentation to include, but not limited to, all study assumptions, technical calculations and RAS generation trips.

**Response:**

BPA has provided all responsive documents to you in their entirety.

I appreciate the opportunity to assist you. Please contact Laura M. Atterbury, FOIA/Privacy Act Specialist at (503) 230-7305 with any questions about this letter.

Sincerely,

*/s/ Christina J. Munro*

Christina J. Munro  
Freedom of Information Act/Privacy Act Officer

Enclosure(s): Responsive Documents

## Johns,Michael C - TEP-TPP-1

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**From:** Johns,Michael C - TEP-TPP-1  
**Sent:** Tuesday, July 21, 2009 4:58 PM  
**To:** Johnston,Kenneth H - TSE-TPP-2  
**Cc:** Korsness,Mark A - TEP-TPP-3; Wittpenn,Nancy A - KEC-4; Driessen,Laurens C  
**Subject:** PAC meeting info

Hi Ken

Welcome back.

From all accounts the initial PAC/BPA meeting went well. I've captured what I think the salient points were. I would invite Nancy and Lou to add their thoughts.

After opening introductions we all started with a "professional laugh" as we each thought that each respective party had initiated the meeting.

We (BPA) stated our case for the I-5 project and the preliminary routing work that we're doing now. With the aid of the large maps we brought we laid out areas of concern and possible conflicts in the Merwin Dam and Troutdale/Camas areas. We also talked about PAC lines in and around our I-5 study areas.

They (PAC) seemed primarily focused on their proposed Swift-Troutdale 230-kv project and the vacant 100ft right-of-way that they have. There was discussion of the possibility of a joint BPA/PAC project on the East side of the I-5 Project. Nancy did an excellent job of summarizing our NEPA process but there were numerous questions that went unanswered on what a joint siting study or joint funded EIS would look like.

They're was a general feeling that we were going to need to work together on these projects and a couple comments that if we didn't do it early in the process that it was likely the process (i.e. the public) would force us to do it latter.

Subsequent to the meeting a couple other meeting/discussions occurred.

1) Nancy set up a meeting with Hub Adams that Lou and I and Mark (by phone) to discussed the complications that a PAC involvement would bring. A question for the policy group looking into these issues would be if we can separate early siting/NEPA work from the larger questions of equity and ownership. I'm sure there will be more to follow on that issue

2) Lou and I got the specific PAC maps for of the vacant PAC Swift-Troutdale right-of-way. We have not had a chance to review their right-of-way in the field however it's clear that using this right-of-way for the I-5 project would be problematic. If I was to hazard to guess I'd say there "maybe" sections of this PAC right-of-way that could prove helpful.

We can do a further debrief if you would like. I would suggest though in interests of everyone busy schedule and changing events that we have a pre-meeting ahead of your next regular scheduled PAC meeting instead.

Thanks for helping set up the meeting

Mike

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**From:** Johnston,Kenneth H - TSE-TPP-2  
**Sent:** Monday, July 20, 2009 5:14 PM  
**To:** Johns,Michael C - TEP-TPP-1  
**Cc:** Driessen,Laurens C  
**Subject:** RE: Follow-up to yesterday's meeting

Gents,  
How'd the meeting go? Should we do a debrief?

Ken

**From:** Johns,Michael C - TEP-TPP-1  
**Sent:** Tuesday, June 23, 2009 9:01 AM  
**To:** Johnston,Kenneth H - TSE-TPP-2  
**Cc:** Driessen,Laurens C  
**Subject:** Follow-up to yesterday's meeting

Hi Ken

This is the e mail I said I would forward onto you showing the impact of paralleling the new 500-kv line with various existing BPA and foreign lines. FYI

Lou and I are set for this Friday's meeting with PAC @ 9:30am. Please let us know building and room number.

Thanks

Mike

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**From:** Radcliff,Tony P - TPP-OPP-3  
**Sent:** Monday, April 27, 2009 12:19 PM  
**To:** Johns,Michael C - TE-TPP-1; Korsness,Mark A - TEP-TPP-3; Grover,John J - TELP-TPP-3; Driessen,Laurens C  
**Cc:** Rodrigues,Melvin T - TPP-OPP-3; Tesema,Berhanu K - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3; Hammack,Debby - TPP-OPP-3  
**Subject:** RE: I-5

Mike,

Constructing the new line next to the Paul-Allston #2 and Castle Rock-Allston #1 500kV lines should be avoided, except for up to five spans outside of the substation. However, the outage of either of these lines with the new line will not be the most limiting outage for the path. The worst outage is the double line loss of the Paul-Allston #2 and Castle Rock-Allston #1 500kV lines. The ranking worst to best is as follows:

- Paul-Allston #2 500kV
- Castle Rock-Allston 500kV
- Chehalis-Longview #1 & #3 230kV lines
- None

Tony

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**From:** Johns,Michael C - TE-TPP-1  
**Sent:** Friday, April 24, 2009 1:25 PM  
**To:** Radcliff,Tony P - TPP-OPP-3; Korsness,Mark A - TEP-TPP-3; Grover,John J - TELP-TPP-3; Driessen,Laurens C  
**Cc:** Rodrigues,Melvin T - TPP-OPP-3; Tesema,Berhanu K - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3; Hammack,Debby - TPP-OPP-3  
**Subject:** RE: I-5

Tony

Thanks for all the info. The 230kv line list (from worst to best) is especially helpful. Lou and I were out at Pearl yesterday and it's clear that breaking away from parallel after 5 spans (to the Northwest) will be very difficult. You didn't mention any limitations for coming out of the new Castle Rock substation is that because there is none?

Thanks

Mike

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**From:** Radcliff,Tony P - TPP-OPP-3  
**Sent:** Wednesday, April 22, 2009 2:11 PM  
**To:** Korsness,Mark A - TEP-TPP-3; Grover,John J - TELP-TPP-3; Johns,Michael C - TE-TPP-1; Driessen,Laurens C  
**Cc:** Rodrigues,Melvin T - TPP-OPP-3; Tesema,Berhanu K - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3; Hammack,Debby - TPP-OPP-3  
**Subject:** RE: I-5

Mark,

Below is a list of potential lines that either the Castle Rock-Troutdale or Pearl lines may be constructed adjacent to. Some of the impacts are listed.

The new line should not be constructed adjacent to the 500kV lines listed below. If the lines are adjacent, a new common mode outage will be created, which results in overloads at or near today's system limits. Under these conditions the new line will yield no new capacity due to the new common mode outage.

- Allston-Keeler 500kV
- Keeler-Pearl 500kV
- Lines that cannot be adjacent for more than 5 spans out of a substation and must have at least 2000ft separation elsewhere from the new 500kV line

The new 500kV line may be constructed adjacent to the 230kV lines listed below. The lines are listed in order of worst to best in terms of impact to the South of Allston path capacity. Also, the MW impact is listed next to the line name.

Castle Rock-Pearl Option

(Listed in order worst to best w/South of Allston path capacity loss)

- PGE Trojan-St. Mary's 230kV -1170
- PGE Rivergate-Trojan 230kV -645
- PGE Keeler-St. Mary's 230kV -360
- PGE St. Mary's-Murray Hill 230kV -280
- PGE Rivergate-Keeler 230kV -100
- PGE Allston-Trojan #1 230kV -70
- PGE Allston-Trojan #2 230kV -70
- PGE Pearl-Sherwood West 230kV -55
- PGE Pearl-Sherwood East 230kV -45
- PGE Sherwood-Murray Hill #1 230kV --
- PGE Sherwood-Murray Hill #2 230kV --
- None

Castle Rock-Troutdale Option

(Listed in order worst to best w/South of Allston path capacity loss)

- BPA Ross-Lexington 230kV -750 MW
- BPA N.Bonneville-Troutdale #1 230kV -25 MW
- BPA N.Bonneville-Troutdale #2 230kV -25 MW
- BPA N.Bonneville-Ross #1 230kV --
- BPA N.Bonneville-Ross #2 230kV --
- BPA McNary-Ross 345kV --
- None

It may be possible to restore lost capacity by using a RAS generation trip in the Longview-Allston area for the new common mode outages.

Tony

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**From:** Korsness,Mark A - TEP-TPP-3  
**Sent:** Friday, April 17, 2009 10:56 AM  
**To:** Korsness,Mark A - TEP-TPP-3; Grover,John J - TELP-TPP-3; Rydell,Kendall A - TPP-OPP-3; Raddcliff,Tony P - TPP-OPP-3; Rodrigues,Melvin T - TPP-OPP-3; Hammack,Debby - TPP-OPP-3  
**Subject:** I-5  
**When:** Wednesday, April 22, 2009 11:00 AM-12:00 PM (GMT-08:00) Pacific Time (US & Canada).  
**Where:** Room 309 TPP

Please attend a meeting of our new line routing engineers (Mike Johns and Lou Driessen) and Planning to discuss I-5 and the routing options to be developed this summer. Wednesday, April 22, at 11:00 in Room 309 of TPP.

Thanks.....Mark

## Rydell,Kendall A - TPP-OPP-3

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**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Tuesday, September 08, 2009 1:10 PM  
**To:** Korsness,Mark A - TEP-TPP-3  
**Subject:** I-5 Information for Sept.9 Meeting

**Attachments:** SeparatevsAdjacent.doc

Mark,  
Here is the write-up on pros/cons of building Castle Rock-Troutdale on separate corridor versus adjacent to Ross-Lexington 230 kV.  
Let me know if you have any questions.  
Kendall



SeparatevsAdjacen  
t.doc (27 KB)...

## I-5 Corridor Reinforcement Project

### Consequences of Building Adjacent to Lines on Existing Right-of-Way versus Building on a Separate Corridor

BPA plans its system to comply with NERC and WECC Reliability Standards. NERC = North American Electric Reliability Corporation and WECC = Western Electricity Coordinating Council. In order to meet the standards, the transmission system must be planned to withstand the loss of adjacent lines – NERC requires planning for circuits on common towers and WECC requires planning for circuits which share the same corridor (aka common corridor). In order to comply with the reliability standards, outages (single element and credible multiple element outages) must not result in overloaded equipment or voltages beyond their limits. For a new line built on separate corridor, only the outage of the new line, by itself, must be considered and planned for. When a new line is built adjacent to another circuit, the simultaneous outage of both facilities must be planned for. In general, the more elements out of service simultaneously, the more impact to the system. From a Planning and Operations perspective, it is desirable to construct new facilities on separate corridor, in order to avoid the issues associated with multiple outages.

In the case of the I-5 Corridor Reinforcement Project, one the alternatives for the project, is to build a new 500 kV line to Troutdale substation. Several routes are being considered for this alternative – including building the line on new, separate right-of-way, as well as building the new line adjacent to the existing Ross-Lexington 230 kV line.

#### Separate Corridor

The advantage of building the new line on completely separate corridor, is that maximum capacity benefit would be realized from the project, since only a single element outage would need to be planned for. The additional capacity that the new 500 kV line would bring is approximately 1300 MW (depending on the generation pattern and other system factors) The disadvantages of building the new line on separate corridor, are: (a) the higher cost of acquiring land for the separate corridor, (b) greater environmental impacts of acquiring separate corridor instead of using existing rights-of-way, (c) more controversial plan of service due to not utilizing existing corridor when it is available.

#### Existing Corridor

Building the new line on the existing right-of-way with the Ross-Lexington 230 kV line, is also being considered. This line is part of the same path (South of Allston) that we are reinforcing with the I-5 Corridor project. The advantages of building in this corridor, are: (a) Lower cost because most of the land is already available, (b) less environmental impact since all new rights-of-way is not being acquired, (c) potentially less controversial plan of service since the new line would be built where transmission lines already exist, instead of a completely new location. The disadvantage of building the new line adjacent to Ross-Lexington 230 kV, is the need to plan for the simultaneous outage of both the new 500 kV and existing 230 kV line. This reduces some of the capacity that could be gained from building the new line. However, other measures, such as RAS, facility upgrades, etc. can potentially mitigate most of this impact.

Other considerations when building the new 500 kV line adjacent to another line (in order to maximize use of existing corridor) are described below. In each case, the problems result from the need to plan for the outage of more than one line, because the circuits are adjacent.

- Building adjacent to another 500 kV line in the area, such as Allston-Keeler or Keeler-Pearl – This is not acceptable because we would have to plan for the common outage of the new line with the existing line, which would put us back in the same situation that we have today for the loss of the existing line alone, which limits the system capacity.
- Building adjacent to another lower voltage line in the same path (South of Allston). This is less desirable than building on a separate corridor, because we would have to plan for an outage of two facilities in the same path, instead of one, which would result in a greater reduction of capacity for that path (or higher costs to mitigate the impacts).
- Building adjacent to another lower voltage line which is not part of the same path, would need to be studied on a case-by-case basis to determine whether it would reduce the benefits of the project.

DRAFT

**Asgharian, Maryam A - DKE-7**

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**From:** Korsness, Mark A - TEP-TPP-2  
**Sent:** Thursday, October 15, 2009 10:39 AM  
**To:** Klumpp, Elizabeth C - DKR-WSGL  
**Cc:** Wittpenn, Nancy A - KEC-4; Asgharian, Maryam A - DKE-7; Rydell, Kendall A - TPP-OPP-3; Driessen, Laurens C; Johns, Michael C - TEP-TPP-1; Grover, John J - TELP-TPP-3  
**Subject:** I-5

Liz, in response to your question:

Reduced capacity on the Ross-Lexington route will be discussed along with all the other benefits and negatives for each route in the DEIS. Depending on the conditions of the operating system at the time we put pen to paper, at what planning wants to do to mitigate by addressing other lines at the same time, we may show a big impact or just a little impact to capacity. Since we have no preferred route at this time, we don't need to do much to compare the different routes yet with just partial data. OK to talk about it though.

Thanks.....Mark

## Rydell,Kendall A - TPP-OPP-3

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**From:** Radcliff, Tony P - TPP-OPP-3  
**Sent:** Friday, December 04, 2009 11:19 AM  
**To:** Johnson, G Douglas - DKP-7; Rydell, Kendall A - TPP-OPP-3  
**Subject:** RE: NERC standard addressing lines on same corridor

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

Doug,

- WECC Planning standards require planning for the loss of two adjacent transmission circuits.
  - Common Corridor:
    - Contiguous right-of-way or two parallel right-of-ways with structure centerline separation less than the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits. This separation requirement does not apply to the last five spans of the transmission circuits entering into a substation.
  - Adjacent Transmission Circuits:
    - Transmission circuits within a Common Corridor with no other transmission circuits between them. Transmission Lines that cross but are otherwise on separate corridors are not Adjacent Transmission Circuits.

If the Castle Rock-Troutdale 500kV line is constructed adjacent to the Ross-Lexington 230kV line, BPA Planning and Operations will be required by the WECC to plan and operate the system based on the impacts of the simultaneous outage of both lines. If the new double line outage has an adverse impact on the system, the rating of the South of Allston path will be reduced. Path ratings are the maximum flows allowed on a path (a set of transmission lines) for a specific operating condition. The rating of the individual lines are not affected by outage conditions; the line ratings are affected by how they are constructed and ambient temperature.

The South of Allston path is a set of north-south lines that support the Portland/Vancouver load service area. The Ross-Lexington 230kV line is one of the lines in the South of Allston path. If the Castle Rock-Troutdale 500kV line is constructed, it will be included in the South of Allston path. All of the lines in the path are as follows:

- Keeler-Allston\* 500-kV
- Trojan\*-St. Marys 230-kV (PGE)
- Trojan\*-Rivergate 230-kV (PGE)
- Ross\*-Lexington 230-kV (rev)
- St. Helens-Allston\* 115-kV
- Merwin\*-St. Johns 115-kV (PACW)
- Seaside-Astoria\* 115-kV (PACW)
- Clatsop\* 230/115-kV (rev)

The new double line outage will cause the loss of two lines in the path and will de-rate the path's capacity as compared to the path's rating for the loss of a single line in the path. In other words, the South of Allston path will be de-rated for the simultaneous loss of the Castle Rock-Troutdale 500kV and the Ross-Lexington 230kV lines as compared to the path's rating for the single line loss of the Castle Rock-Troutdale 500kV line. With the Castle Rock-Troutdale 500kV in service the **South of Allston path capacity (rating) will increase**, even if BPA is required to plan for the double line loss of the Castle Rock-Troutdale 500kV and the Ross-Lexington 230kV lines. However, BPA will not be able to use the full capacity provided by the new 500kV line due to the new double line outage. This will result in the speed up of future projects in order to meet load service and transfer obligations.

Let me know if you have any more questions.

Tony

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**From:** Johnson, G Douglas - DKP-7  
**Sent:** Thursday, December 03, 2009 1:01 PM

**To:** Rydell,Kendall A - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3  
**Subject:** NERC standard addressing lines on same corridor

Kendall and Tony,

Erik Robinson with the Columbian has called really trying to understand how the process of "derating" a line placed on the same corridor works. He has a couple of standards from NERC--but is really trying to characterize how that standard manifests itself on the ground as high voltage transmission owners calculate how much of the line's capacity they can count on. Can you help? Thanks.

Doug Johnson  
Bonneville Power Administration  
503-230-5840

## Korsness,Mark A - TEP-TPP-3

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**From:** Rodrigues,Melvin T - TPP-OPP-3  
**Sent:** Thursday, December 17, 2009 10:56 AM  
**To:** Korsness,Mark A - TEP-TPP-2; Juj,Hardev S - TP-DITT-2; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Cc:** Bekkedahl,Larry N - TE-DITT-2; Silverstein,Brian L - T-DITT2; Beck,Gary O - TEP-TPP-1  
**Subject:** \*\*\* I-5 Segment 09

Hi Mark,  
As promised the following is the write up for addressing segment #9. If you have any questions, please call me or Kendall.  
Thanks  
Melvin

The proposed route segment #9 of the I-5 Corridor Reinforcement project uses the existing Ross-Lexington 230kV right-of-way. Utilizing segment #9 will place the new Castle Rock- Troutdale 500kV line adjacent to the existing Ross-Lexington 230kV line in the same right-of-way. The WECC planning reliability criteria requires BPA to plan for the simultaneous loss of adjacent lines in the same right-of-way. The simultaneous loss of the new 500kV line with the Ross-Lexington 230kV line will become one of the critical outages for the South of Allston path. However, further analysis shows that the impacts of the outage can be mitigated, with no loss of path capacity, by adding a Remedial Action Scheme to trip generation. Therefore, BPA Planning believes the proposed route including segment #9 is an acceptable option for the I-5 Corridor Reinforcement project.

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 10:02 AM  
**To:** Juj,Hardev S - TP-DITT-2; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Cc:** Bekkedahl,Larry N - TE-DITT-2; Silverstein,Brian L - T-DITT2; Beck,Gary O - TEP-TPP-1  
**Subject:** RE: I-5

Just checking in. Are we shooting for noon to have the Segment 09 paper on Steve's desk? Let me know if I can help. I know that we are scheduled to have the outreach plan and press release on Steve's desk by noon.  
Thanks.....Mark

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**From:** Bekkedahl,Larry N - TE-DITT-2  
**Sent:** Thursday, December 17, 2009 6:55 AM  
**To:** Korsness,Mark A - TEP-TPP-2; Silverstein,Brian L - T-DITT2; Beck,Gary O - TEP-TPP-1  
**Cc:** Juj,Hardev S - TP-DITT-2; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Subject:** RE: I-5

Mark,

We had a further conversation with Steve at the end of the TMC meeting and I with him at that break. He wanted to confirm that we really would not go back and build on section 31. When you mentioned that we would go back to Oregon before building on section 31 that got his attention that we might actually be thinking of going back to Oregon.

I confirmed with him your notion that there is no chance that we will ever build on section 31. But I emphasized that we would go further east before ever considering going into Oregon again. Steve did not realize that we had multiple options

further east. It was apparent that he thought we only had one other route to the east. So Brian showed him the map and I believe he understands that message.

What we did talk about is section 9, and what does a de-rate mean. He wants to make sure that it is a viable option and what does it mean to de-rate the line. In simple terms:

- 1) How much will we be limited to on the line?
- 2) Just as we discussed in the morning meeting - How many years do we think the line will be good for before further expansion is required (20 years?),
- 3) Will that cover our current needs and the capacity requirements of the new NOS wind projects?

Hardev is going to have his team answer the de-rate questions. If we are all convinced that section 9 is a viable option, then I believe he is ready to release section 31.

Brian - does that capture what we discussed?

Larry

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Wednesday, December 16, 2009 7:52 PM  
**To:** Silverstein,Brian L - T-DITT2; Bekkedahl,Larry N - TE-DITT-2; Beck,Gary O - TEP-TPP-1  
**Subject:** I-5

Brian, just to confirm, if you are able to get some time with Steve tomorrow or Friday, I can make myself available to briefly explain the different routes under consideration on the project map. It might help him understand why announcing the dropping of route 31 now is such a clear and important decision for us.

Thanks.....Mark

## Rydell,Kendall A - TPP-OPP-3

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**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Friday, December 18, 2009 9:27 AM  
**To:** Korsness,Mark A - TEP-TPP-2  
**Cc:** Klumpp,Elizabeth C - DKR-WSGL; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

The BPA dictionary gives this definition for RAS: A set of fast, automatic control actions used to ensure acceptable power system

Also, Brian's revised paragraphs for question #6 of the talking points, describes the RAS for this area very well:

High-speed automatic controls that rapidly disconnect large amounts of generation to avoid overloading lines if part of the transmission system goes out of service.

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 5:41 PM  
**To:** Rydell,Kendall A - TPP-OPP-3  
**Cc:** Klumpp,Elizabeth C - DKR-WSGL; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

Can you describe for us?

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**From:** Klumpp,Elizabeth C - DKR-WSGL  
**Sent:** Thursday, December 17, 2009 1:39 PM  
**To:** Korsness,Mark A - TEP-TPP-2; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

This is a pretty key and new interpretation isn't it? If you learn what a "Remedial Action Scheme" is, please let us know.

Thanks, Mark.

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 1:36 PM  
**To:** Wittpenn,Nancy A - KEC-4; Klumpp,Elizabeth C - DKR-WSGL; Johnson,G Douglas - DKP-7  
**Subject:** FW: I-5 Segment 09 western most route

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 1:36 PM  
**To:** Wright,Stephen J - A-7  
**Cc:** Silverstein,Brian L - T-DITT2; Bekkedahl,Larry N - TE-DITT-2; Juj,Hardev S - TP-DITT-2; Beck,Gary O - TEP-TPP-1; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Subject:** I-5 Segment 09 western most route

Steve, below is the write up from Planning concerning the Segment 09 alternative that would parallel the Ross-Lexington 230kV line on existing vacant right of way. Let us know if you have any other information needs in support of your making a decision regarding the proposed announcement.

Thanks.....Mark

**From:** Rodrigues, Melvin T - TPP-OPP-3  
**Sent:** Thursday, December 17, 2009 10:56 AM  
**To:** Korsness, Mark A - TEP-TPP-2; Juj, Hardev S - TP-DITT-2; Radcliff, Tony P - TPP-OPP-3; Rydell, Kendall A - TPP-OPP-3  
**Cc:** Bekkedahl, Larry N - TE-DITT-2; Silverstein, Brian L - T-DITT2; Beck, Gary O - TEP-TPP-1  
**Subject:** RE: I-5

Hi Mark,  
As promised the following is the write up for addressing segment #9. If you have any questions, please call me or Kendall.  
Thanks  
Melvin

**The proposed route segment #9 of the I-5 Corridor Reinforcement project uses the existing Ross-Lexington 230kV right-of-way. Utilizing segment #9 will place the new Castle Rock- Troutdale 500kV line adjacent to the existing Ross-Lexington 230kV line in the same right-of-way. The WECC planning reliability criteria requires BPA to plan for the simultaneous loss of adjacent lines in the same right-of-way. The simultaneous loss of the new 500kV line with the Ross-Lexington 230kV line will become one of the critical outages for the South of Allston path. However, further analysis shows that the impacts of the outage can be mitigated, with no loss of path capacity, by adding a Remedial Action Scheme to trip generation. Therefore, BPA Planning believes the proposed route including segment #9 is an acceptable option for the I-5 Corridor Reinforcement project.**

## Anasis,John G - TOT-DITT2

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**From:** Goodrich,Daniel A - TOT-DITT2  
**Sent:** Tuesday, April 13, 2010 8:04 AM  
**To:** Viles, Mike R - TOT-DITT2; Anasis, John G - TOT-DITT2  
**Subject:** RE: Castle Rock-Troutdale issues

This seems to address all of the major issues. I was thinking about creating a spreadsheet like the one HDR developed that includes our final and construction outage concerns listed by line segment, as a supplement to this e-mail--the spreadsheet would take a few weeks, though, as we need the planned transmission path alignments and length/type of construction outage information. I'd suggest sending out the e-mail now, and developing the other information later.

### *Daniel Goodrich*

Electrical Engineer, Technical Operations TOT-DITT2  
x2338

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**From:** Viles, Mike R - TOT-DITT2  
**Sent:** Friday, April 09, 2010 1:03 PM  
**To:** Anasis, John G - TOT-DITT2; Goodrich, Daniel A - TOT-DITT2  
**Subject:** FW: Castle Rock-Troutdale issues

I added another bullet in red.

---

**From:** Viles, Mike R - TOT-DITT2  
**Sent:** Friday, April 09, 2010 12:47 PM  
**To:** Anasis, John G - TOT-DITT2; Goodrich, Daniel A - TOT-DITT2  
**Subject:** Castle Rock-Troutdale issues

John/Dan,

Please review and make changes and additions to capture our thoughts on this project. I would like to send something to Lou and Mark on Monday.

Thanks  
Mike

Here are some of the ideas we planted with the Castle Rock-Troutdale team today.

1. Minimizing RAS via a separate corridor is preferred by operations
  - Loss of the Ross-Lexington 230 line and the new Castle Rock-Troutdale 500 line will be more limiting when the Keeler-Allston line is out of service than the Castle Rock-Troutdale 500 line outage in a separate north to south corridor.
  - Loss of the McNary-Ross 345 line and the new Castle Rock-Troutdale 500 line may be more limiting than the simultaneous loss of a North Bonneville 230 line and the Castle Rock-Troutdale 500 line.
  - With the new 500kV line in service, an outage of the an existing line should not reduce the South of Allston path limit lower than the existing all lines in service limit. I.e., after energization of the Castle Rock-Troutdale and outage of the Keeler-Allston 500 line or the Pearl-Keeler line should not result in the South of Allston system operating limit (SOL) being more restrictive than the existing all lines in service SOL.
2. Building the new Castle Rock-Troutdale line adjacent to a 115kV line is preferred to building it adjacent to a 230kV line.
  - Combined loss of a 500kV and 115kV line should be less impact for planned outages and all lines in service.
3. Construction outages needed to build some options may be difficult if not impossible to get.
  - Simultaneous outages of the North Bonneville-Troutdale's 230kV lines and the Ostrander-Troutdale 500kV line for construction will be hard.
4. Should consider flexibility in design to allow 500/230 bank at Ross in the future.
  - If we say there isn't need today, it increases the probability it will be needed in the future.

## Bennett,Michelle L - KEC-4

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**From:** Wittpenn,Nancy A - KEC-4  
**Sent:** Saturday, August 14, 2010 6:57 AM  
**To:** Bennett,Michelle L - KEC-4  
**Subject:** FOIA 815

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**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Friday, December 18, 2009 9:27 AM  
**To:** Korsness,Mark A - TEP-TPP-2  
**Cc:** Klumpp,Elizabeth C - DKR-WSGL; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

The BPA dictionary gives this definition for RAS: A set of fast, automatic control actions used to ensure acceptable power system

Also, Brian's revised paragraphs for question #6 of the talking points, describes the RAS for this area very well:

High-speed automatic controls that rapidly disconnect large amounts of generation to avoid overloading lines if part of the transmission system goes out of service.

---

**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 5:41 PM  
**To:** Rydell,Kendall A - TPP-OPP-3  
**Cc:** Klumpp,Elizabeth C - DKR-WSGL; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

Can you describe for us?

---

**From:** Klumpp,Elizabeth C - DKR-WSGL  
**Sent:** Thursday, December 17, 2009 1:39 PM  
**To:** Korsness,Mark A - TEP-TPP-2; Wittpenn,Nancy A - KEC-4; Johnson,G Douglas - DKP-7  
**Subject:** RE: I-5 Segment 09 western most route

This is a pretty key and new interpretation isn't it? If you learn what a "Remedial Action Scheme" is, please let us know.

Thanks, Mark.

---

**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 1:36 PM  
**To:** Wittpenn,Nancy A - KEC-4; Klumpp,Elizabeth C - DKR-WSGL; Johnson,G Douglas - DKP-7  
**Subject:** FW: I-5 Segment 09 western most route

---

**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 1:36 PM  
**To:** Wright,Stephen J - A-7  
**Cc:** Silverstein,Brian L - T-DITT2; Bekkedahl,Larry N - TE-DITT-2; Juj,Hardev S - TP-DITT-2; Beck,Gary O - TEP-TPP-1; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Subject:** I-5 Segment 09 western most route

Steve, below is the write up from Planning concerning the Segment 09 alternative that would parallel the Ross-Lexington

230kV line on existing vacant right of way. Let us know if you have any other information needs in support of your making a decision regarding the proposed announcement.  
Thanks.....Mark

---

**From:** Rodrigues,Melvin T - TPP-OPP-3  
**Sent:** Thursday, December 17, 2009 10:56 AM  
**To:** Korsness,Mark A - TEP-TPP-2; Juj,Hardev S - TP-DITT-2; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Cc:** Bekkedahl,Larry N - TE-DITT-2; Silverstein,Brian L - T-DITT2; Beck,Gary O - TEP-TPP-1  
**Subject:** RE: I-5

Hi Mark,  
As promised the following is the write up for addressing segment #9. If you have any questions, please call me or Kendall.  
Thanks  
Melvin

**The proposed route segment #9 of the I-5 Corridor Reinforcement project uses the existing Ross-Lexington 230kV right-of-way. Utilizing segment #9 will place the new Castle Rock- Troutdale 500kV line adjacent to the existing Ross-Lexington 230kV line in the same right-of-way. The WECC planning reliability criteria requires BPA to plan for the simultaneous loss of adjacent lines in the same right-of-way. The simultaneous loss of the new 500kV line with the Ross-Lexington 230kV line will become one of the critical outages for the South of Allston path. However, further analysis shows that the impacts of the outage can be mitigated, with no loss of path capacity, by adding a Remedial Action Scheme to trip generation. Therefore, BPA Planning believes the proposed route including segment #9 is an acceptable option for the I-5 Corridor Reinforcement project.**



## Department of Energy

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

PUBLIC AFFAIRS

December 3, 2010

In reply refer to: DK-7

Richard van Dijk  
Another Way BPA

Ex 6

**RE: BPA-2010-01815-F**

Dear Mr. van Dijk:

This is a final response to your request for information 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:**

All internal documentation (emails, meeting notes, presentations and individual worksheets) that mitigate the need for de-rating the proposed I-5 line if built using the existing Right of Way known as segments 9 and 25 on the project map. The documentation to include, but not limited to, all study assumptions, technical calculations and RAS generation trips.

**Response:**

In addition to the documents previously provided to you in a letter dated September 22, 2010, BPA has completed a broader search for responsive records and has located a few additional documents which are being released to you in their entirety.

I appreciate the opportunity to assist you. Please contact Laura M. Atterbury, FOIA/Privacy Act Specialist at (503) 230-7305 with any questions about this letter.

Sincerely,

  
Christina J. Munro

Freedom of Information Act/Privacy Act Officer

Enclosure(s): Responsive Documents

## Juj,Hardev S - TP-DITT-2

---

**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Friday, May 28, 2010 4:46 PM  
**To:** Silverstein,Brian L - T-DITT2; Juj,Hardev S - TP-DITT-2  
**Cc:** Korsness,Mark A - TEP-TPP-3; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3  
**Subject:** Draft I-5 Corridor Presentation for June 4 Meeting  
**Attachments:** I5\_WAGov v3.ppt

Brian / Hardev,

Attached is a draft of the I-5 Corridor presentation for the June 4 meeting with members of the Washington Governor's office.

The main objective of the meeting, as well as this presentation, is to focus on the need for the I-5 Corridor Reinforcement project and the challenges that we are facing with today's system that drive the need. Other topics, that were mentioned in an earlier e-mail from Liz Klumpp, are not included in this presentation, however we will be prepared to answer questions that may come up regarding those topics.

We also plan to bring a larger scale version of a map which shows more detail of the transmission facilities in the area affected by the project. The map included in the slides is just meant to give a geographic overview of congested NW paths and a relative indication of where the South of Allston / South of Napavine paths are located.

We would appreciate your review and comments on the attached presentation by Tuesday, June 1.

Thank you,  
Kendall



I5\_WAGov v3.ppt  
(1 MB)

DRAFT

# I-5 Corridor Reinforcement Project

June 4, 2010



# Topics

- Reliability
  - Load Service
  - Managing the Existing Grid
- Congestion
  - Existing Obligations
  - Network Open Season (Committed Obligations)
- Project Benefits





## RELIABILITY – Load Service

- Portland/Vancouver Area Load
  - Growing loads in this area – forecast is 1-2% per year; actual growth has been greater (up to 5% per year)
  - Summer is the critical season driving the need for the I-5 Corridor Reinforcement project
  - Summer Peak loads are approaching Winter peak load levels (historically, Northwest loads have been Winter peaking)
  - Greater penetration of installed air conditioning - this increases summer peak loads and changes the load composition which increases the risk of a fast system collapse
  
- No major (500 kV) transmission reinforcement to the South of Allston path in 40 years
  - Allston-Keeler – 1969
  - Keeler-Pearl - 1964



## Actual LOADS

- **Population Growth** - Based on Census Data

	<b>Cowlitz County</b>	<b>Clark County</b>	<b>Multnomah County</b>
• 2000	pop. 92,948	pop. 345,238	pop. 660,486
• 2008	pop. 101,254	pop. 424,733	pop. 714,567
• Population Growth	8.9% in 8 yrs.	23.0% in 8 yrs.	8.2% in 8 yrs.

- **Historical Load Data** – Based on actual load data provided by Utilities

### Cowlitz PUD (MW) Clark PUD (MW)

	<u>Winter</u>	<u>Summer</u>	<u>Winter</u>	<u>Summer</u>	<u>Winter</u>	<u>Summer</u>
2005	735	586	981	667	3457	3356
2006	740	604	919	746	3608	3746
2007	767	624	992	730	3705	3639
2008	769	628	1059	788	3609	3743
2009	786	623	n/a	823	4031	3949

### Portland General Electric (MW)

Growth 6.9% 6.3% in 5 yrs. 6.4% 21.2% in 5 years 16.6% 17.7% in 5 years

- **Load Forecast:** Summer = 2% per year; Winter = 1.4% per year



## RELIABILITY – Load Service

- The forecasted load growth for the Portland/Vancouver/Longview area is approximately 113 MW per year (approximately 2% forecast). Actual load growth in the summer is approximately 157 MW per year.
- With the forecasted load growth of 113 MW per year, South of Allston path flows will increase approximately 91 MW per year. Actual load growth appears to increase the South of Allston path flow by 126 MW per year.
- With expected load growth and existing obligations, the system will reach the thermal limit by **2015** and will reach the voltage stability limit by **2018**.



## RELIABILITY – Managing the Existing Grid

- Numerous upgrades to the existing facilities, have been made over the years to maximize the use of existing transmission
- Remedial Action Scheme (RAS)
  - Relying on the maximum allowable RAS to maintain reliability
  - RAS involves dropping up to 2800 MW generation and a sectionalizing scheme which severs the westside transmission system
- Curtailments
  - It has become necessary to curtail schedules/generation at times during maintenance outages
  - These curtailments are not an effective method of controlling path flows (reference examples on the following slide)



## CURTAILMENTS

It has become very difficult and inefficient to control South of Allston / South of Napavine path flows with curtailments or generation redispatch

### EXAMPLES:

**September 2008** – Keeler-Pearl 500 kV line out of service for maintenance. South of Allston path exceeded the limit by 57 MW. Required 822 MW of generation adjustments to bring the path flows under the limit (14:1 ratio). PGE came close to dropping some load.

**September 2009** – Paul 500 kV south bus out of service for line repairs. Paul-Allston (South of Napavine) path exceeded the limit by 68 MW. Required 700 MW of schedule cuts. However, due to the slow response of initial schedule reductions, another 100 MW was cut – for a total of 1800 MW – to bring the path within its limit.



## CONGESTION – Existing Obligations

### **I-5 Path increase versus Load Growth:**

- With forecasted load growth of 113 MW per year, the South of Allston path flows will increase by approximately 91 MW per year.

### **I-5 Path increase versus COI Transfers**

- For every 100 MW increase on the COI, the South of Allston path loading increases approximately 23 MW.
- With the existing obligations on the South of Allston path and the COI, and with forecasted load growth, the transmission system will reach its limit by **2015**.



## Network Open Season / Future Commercial Obligations

- There is a total of approximately **1200 MW** of Transmission Service Requests (TSR) enabled by the I-5 project
  
- **2008 Network Open Season (NOS)**  
 The I-5 Corridor project enables **745 MW** of Transmission Service Requests along with other 2008 NOS projects
  - 150 MW TSR's require the I-5 Corridor Reinforcement project
  - 495 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight
  - 100 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight, Little Goose Reinf.
  
- **2009 Network Open Season (NOS)**  
 The I-5 Corridor project enables **451 MW** of Transmission Service Requests along with other 2009 NOS projects
  - 100 MW TSR's require the I-5 Corridor Reinforcement project
  - 176 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight
  - 175 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight, Little Goose



## Summary of Project Benefits

- **Reliability**
  - Improve reliability to the SW Washington and greater Portland load area
  - Reduce dependence on a large amount of generation dropping
- **Capacity/Congestion**
  - Increase needed capacity and reduce congestion on the South of Allston & South of Napavine paths
  - Meet all existing obligations for transmission service
- **Network Open Season**
  - Accommodate 1200 MW total transmission service requests from 2008/09 Network Open Seasons
- **Wind Generation**
  - Improve flexibility to operate the system to accommodate wind generation throughout the year
- **Operations and Maintenance Flexibility**
  - Improve opportunities for maintenance by reducing congestion - With aging equipment, it is critical to perform scheduled maintenance



## Juj,Hardev S - TP-DITT-2

---

**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Thursday, June 03, 2010 5:01 PM  
**To:** Rodrigues,Melvin T - TPP-OPP-3; Juj,Hardev S - TP-DITT-2; Bekkedahl,Larry N - TE-DITT-2; Klumpp,Elizabeth C - DKR-WSGL; Radcliff,Tony P - TPP-OPP-3; Silverstein,Brian L - T-DITT2; Korsness,Mark A - TEP-TPP-3  
**Subject:** I-5 Presentation for June 4 Meeting  
**Attachments:** I5\_WAGov v4.ppt

Hello,  
Attached is the final version of the I-5 Corridor Presentation for the June 4 meeting with representatives from the Washington Governor's office.

There are a few minor changes from the draft version sent out previously.

I will also have 10 copies available at the meeting tomorrow.

Kendall



I5\_WAGov v4.ppt  
(1 MB)

# I-5 Corridor Reinforcement Project

June 4, 2010



# Topics

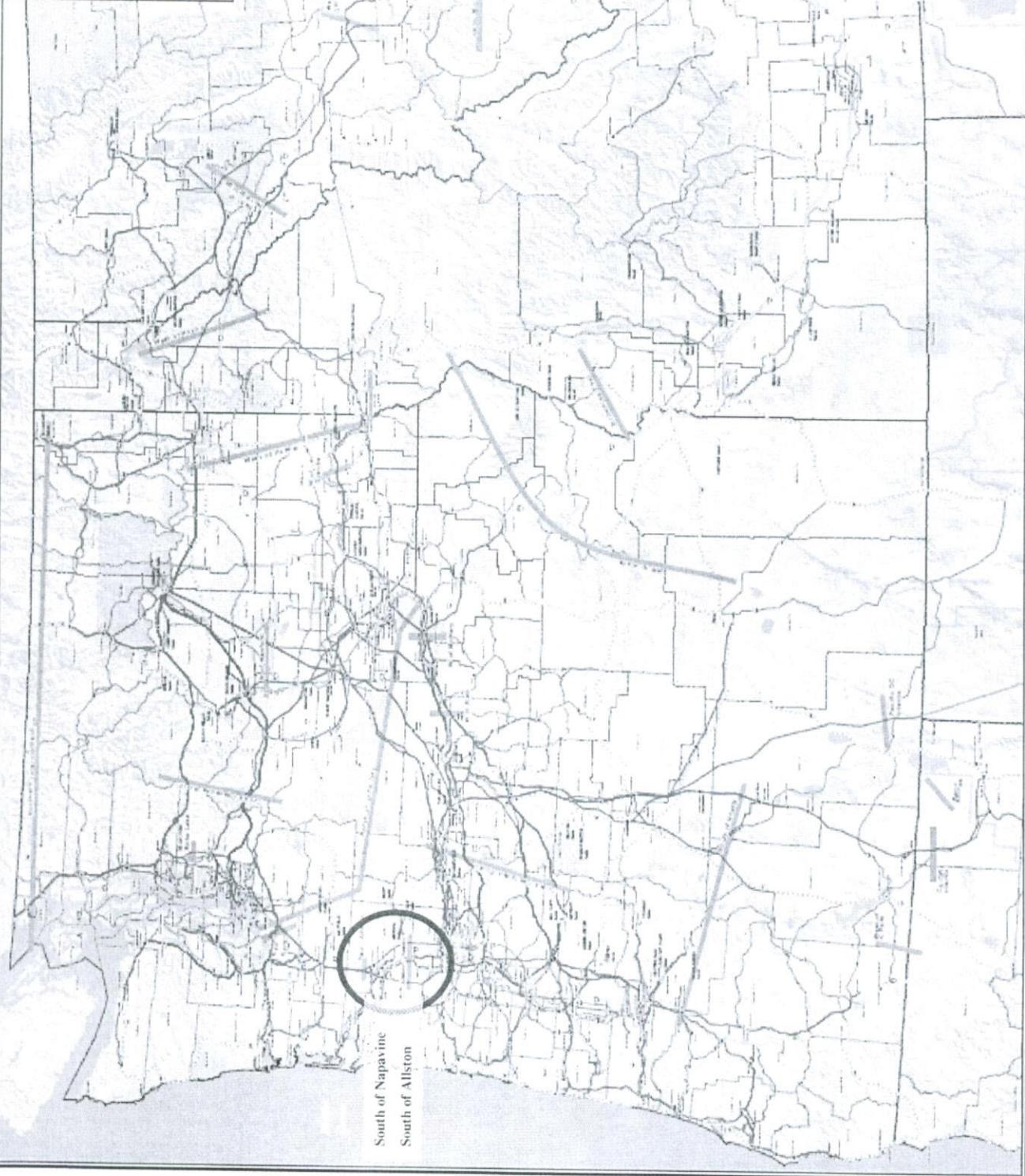
- Reliability
  - Load Service
  - Managing the Existing Grid
- Congestion
  - Existing Obligations
  - Network Open Season (Committed Obligations)
- Project Benefits



### BPA Service Area Transmission Facilities and Flowgates

**Legend**

- 115 kV Transmission Line
- 138 kV Transmission Line
- 220 kV Transmission Line
- 500 kV Transmission Line
- Flowgate
- Substation
- Water
- Topographic Contour
- State Boundary



South of Napavine  
South of Allston

## RELIABILITY – Load Service

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  - Growing loads in this area – forecast is 1-2% per year; actual growth has been greater (up to 5% per year)
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<b>Growth</b>	6.9%	6.3% in 5 yrs.	13.6%	23.4% in 5 years	16.6%	17.7% in 5 years

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### EXAMPLES:

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## CONGESTION – Existing Obligations

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- With forecasted load growth of 113 MW per year, the South of Allston path flows will increase by approximately 91 MW per year.

### **I-5 Path increase versus COI Transfers**

- For every 100 MW increase on the COI, the South of Allston path loading increases approximately 23 MW.
- With the existing obligations on the South of Allston path and the COI, and with forecasted load growth, the transmission system will reach its limit by **2015**.



## Network Open Season (Committed Obligations)

- There is a total of approximately **1070 MW** of Transmission Service Requests (TSR) enabled by the I-5 project
- **2008 Network Open Season (NOS)**  
The I-5 Corridor project enables **745 MW** of Transmission Service Requests along with other 2008 NOS projects
  - 150 MW TSR's require the I-5 Corridor Reinforcement project
  - 495 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight
  - 100 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight, Little Goose Reinf.
- **2009 Network Open Season (NOS)**  
The I-5 Corridor project enables **325 MW** of Transmission Service Requests along with other 2008 NOS projects
  - 100 MW TSR's require the I-5 Corridor Reinforcement project
  - 225 MW additional TSR's require I-5, McNary-John Day, Big Eddy-Knight



## Summary of Project Benefits

- **Reliability**
  - Improve reliability to the SW Washington and greater Portland load area
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- **Capacity/Congestion**
  - Increase needed capacity and reduce congestion on the South of Allston & South of Napavine paths
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## Anasis,John G - TOT-DITT2

---

**From:** Goodrich,Daniel A - TOT-DITT2  
**Sent:** Tuesday, April 13, 2010 8:04 AM  
**To:** Viles,Mike R - TOT-DITT2; Anasis,John G - TOT-DITT2  
**Subject:** RE: Castle Rock-Troutdale issues

This seems to address all of the major issues. I was thinking about creating a spreadsheet like the one HDR developed that includes our final and construction outage concerns listed by line segment, as a supplement to this e-mail--the spreadsheet would take a few weeks, though, as we need the planned transmission path alignments and length/type of construction outage information. I'd suggest sending out the e-mail now, and developing the other information later.

### *Daniel Goodrich*

Electrical Engineer, Technical Operations TOT-DITT2  
x2338

---

**From:** Viles,Mike R - TOT-DITT2  
**Sent:** Friday, April 09, 2010 1:03 PM  
**To:** Anasis,John G - TOT-DITT2; Goodrich,Daniel A - TOT-DITT2  
**Subject:** FW: Castle Rock-Troutdale issues

I added another bullet in red.

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**Sent:** Friday, April 09, 2010 12:47 PM  
**To:** Anasis,John G - TOT-DITT2; Goodrich,Daniel A - TOT-DITT2  
**Subject:** Castle Rock-Troutdale issues

John/Dan,

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Thanks  
Mike

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  - With the new 500kV line in service, an outage of the an existing line should not reduce the South of Allston path limit lower than the existing all lines in service limit. I.e., after energization of the Castle Rock-Troutdale and outage of the Keeler-Allston 500 line or the Pearl-Keeler line should not result in the South of Allston system operating limit (SOL) being more restrictive than the existing all lines in service SOL.
2. Building the new Castle Rock-Troutdale line adjacent to a 115kV line is preferred to building it adjacent to a 230kV line.
  - Combined loss of a 500kV and 115kV line should be less impact for planned outages and all lines in service.
3. Construction outages needed to build some options may be difficult if not impossible to get.
  - Simultaneous outages of the North Bonneville-Troutdale's 230kV lines and the Ostrander-Troutdale 500kV line for construction will be hard.
4. Should consider flexibility in design to allow 500/230 bank at Ross in the future.
  - If we say there isn't need today, it increases the probability it will be needed in the future.

**CASTLE ROCK-TROUTDALE (SUNDIAL) 500 KV LINE  
TECHNICAL OPERATIONS CONCERNS**

Line Segment	Construction Outage Comments	Final Configuration Comments
Castle Rock end		
1		
2		
3		
4		
Eastern Alignment (1)	None	These segments are preferred in general because they create a new corridor without other 230 or 500 kV lines in the same ROW.
9		
25		Next to Ross-McNary 345 kV; Bonneville-ALCOA and Ross-Sifton/North Camas 115 kV also in corridor.
36		Next to Ross-McNary 345 kV; Bonneville-ALCOA and Ross-Sifton/North Camas 115 kV also in corridor.
37 and 38		Next to Ross-McNary 345 kV
39		Next to Ross-McNary 345 kV; at East end, Ross-Bonneville 230 kV also in corridor.
40 and 46		East end, next to Bonneville-Ross 1 and 2 230 kV
41 and 45		Next to Sifton-North Camas 115 kV and Bonneville-ALCOA 115 kV
42	?	
43		New ROW
44	?	
47		Next to Bonneville-Ross 1 and 2 230 kV
48		Next to Bonneville-Ross 1 and 2 230 kV
49		South end next to Bonneville-Troutdale 1 and 2 230 kV
50		Next to Sifton-North Camas 115 kV and Bonneville-ALCOA 115 kV

51		Next to Bonneville-Troutdale 1 and 2 230 kV. At the South end, it crosses over the Sifton-North Camas 115 kV and Bonneville-ALCOA 115 kV
52		Next to Bonneville-Troutdale 1 and 2 230 kV. These lines are on separate towers, and the proposed alignments appear to be on either side of the two lines.
53-55	Outage of Bonneville-Troutdale 1 and 2 230 kV and Troutdale-Ostrander 500 kV for x?	?

**NOTES:**

- (1) This alignment is all paths East of paths 9 and 25, including paths 5-8, 10-24, and 26-35.
- (2) There appears to be two possible locations in the same corridor; between the

Originally Developed by Daniel Goodrich, TOT-DITT2

## Anasis,John G - TOT-DITT2

---

**From:** Korsness,Mark A - TEP-TPP-3  
**Sent:** Monday, March 22, 2010 10:59 AM  
**To:** Anasis,John G - TOT-DITT2; Goodrich,Daniel A - TOT-DITT2; Sundborg,Sara D - TOT-DITT2; O'Brien,James G - TOT-DITT2  
**Subject:** I-5 project FW: Planning's Comments on Line Configurations near Castle Rock

What do you guys think?

We are considering a southern substation site at the "Y" near Castle Rock, or a Northern substation site 4 miles north.  
.....Mark

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**From:** Driessen,Laurens C  
**Sent:** Monday, March 22, 2010 10:30 AM  
**To:** Korsness,Mark A - TEP-TPP-3; Johns,Michael C - TEP-TPP-1; Wittpenn,Nancy A - KEC-4  
**Subject:** RE: Planning's Comments on Line Configurations near Castle Rock

First time I have seen this. Mark, do want to send this to technical Operations (John Anasis and/or Mike Viles) for their comment to make sure Option 1 double circuit 230-kV is OK with them? If this option works, then we can dispense with all the other options that go outside the existing ROW from the Northern Site to the Y-site except for parallel from the Northern Site to within about 1 mile from the Y-site and then double circuit the 230-kV lines for one mile to get past existing homes. This option would then connect to Segments 1, 2 and 3. By only including Option 1, it would simplify things. I would recommend still then having an all Non-Parallel route going easterly from the Northern Site that would be almost entirely on Longview Fiber and Weyerhaeuser and DNR. So we would end up with two routing options from the Northern Site.

Lou

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**From:** Korsness,Mark A - TEP-TPP-3  
**Sent:** Friday, March 19, 2010 10:34 AM  
**To:** Driessen,Laurens C; Johns,Michael C - TEP-TPP-1; Wittpenn,Nancy A - KEC-4  
**Subject:** FW: Planning's Comments on Line Configurations near Castle Rock

Can't remember if I have already sent this to you.....Mark

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**From:** Rydell,Kendall A - TPP-OPP-3  
**Sent:** Thursday, March 11, 2010 4:25 PM  
**To:** Korsness,Mark A - TEP-TPP-3  
**Cc:** Radcliff,Tony P - TPP-OPP-3; Grover,John J - TELP-TPP-3  
**Subject:** Planning's Comments on Line Configurations near Castle Rock

Mark,  
Here are Planning's comments on possible alternatives for configuring lines out of the northern Castle Rock site. The focus of these alternatives is on using "existing" right-of-way to route the new line out of Castle Rock for 4 miles to the "Y" site.

The alternatives are listed in Planning's order of preference with the indicated reasoning.

**1. Re-build the existing Chehalis-Longview 230 kV lines to double circuit 230 kV and use the vacant space to build the new Castle Rock-Troutdale line as single circuit 500 kV.**

This is Planning's preferred alternative because the 230 kV double circuit outage created with this option is the least severe from a reliability perspective, compared with the other options. The drawback is that the capacity of the circuit operated as Castle Rock-Troutdale, would be limited by sections of 2-Chukar conductor. However, this has not shown up to be a bottleneck in the studies.

**2. Re-build one of the existing Chehalis-Longview 230 kV lines to double circuit 500 kV - with one side operated at 230 kV as one of the Chehalis-Longview lines and the other side operated at 500 kV as the Napavine-Allston 500 kV Line. The existing Napavine-Allston circuit would be operated as Castle Rock-Troutdale.**

This alternative would create a slightly worse double circuit outage than option 1 because it would take out a 500 kV line along with the 230 kV (instead of 2-230 kV circuits). Again, the capacity of the circuit operated as Castle Rock-Troutdale,

would be limited by sections of 2-Chukar conductor. However, this has not shown up to be a bottleneck in the studies.

**3. Re-build the existing Napavine-Allston 500 kV line to double circuit 500 kV - with one circuit operated as Napavine-Allston and the other circuit operated as Castle Rock-Troutdale.**

This option creates a more severe outage by combining 2-500 kV lines on the same towers. The advantage of this option is that Castle Rock-Troutdale would be one of the newly constructed circuits with 3-Deschutes conductor and therefore no limiting sections.

**4. Re-build the existing Paul-Allston No.2 500 kV line to double circuit 500 kV - with Paul-Allston No.2 as one circuit and Napavine-Allston as the other circuit. The existing Napavine-Allston would be operated as the new Castle Rock-Troutdale line.**

Planning does not recommend this alternative because the Paul-Allston/Napavine-Allston outage combination is the most critical for the system in this area. With the existing system, these lines share a common corridor. With this alternative, the lines would now share common towers, which is subject to stricter reliability criteria (NERC sanctionable standards versus WECC) in planning for the outage. As the Reliability Standards are changing and the trend is toward stricter standards in general, we don't want to risk losing some of the benefits of the project by creating a new critical double circuit outage along this corridor.

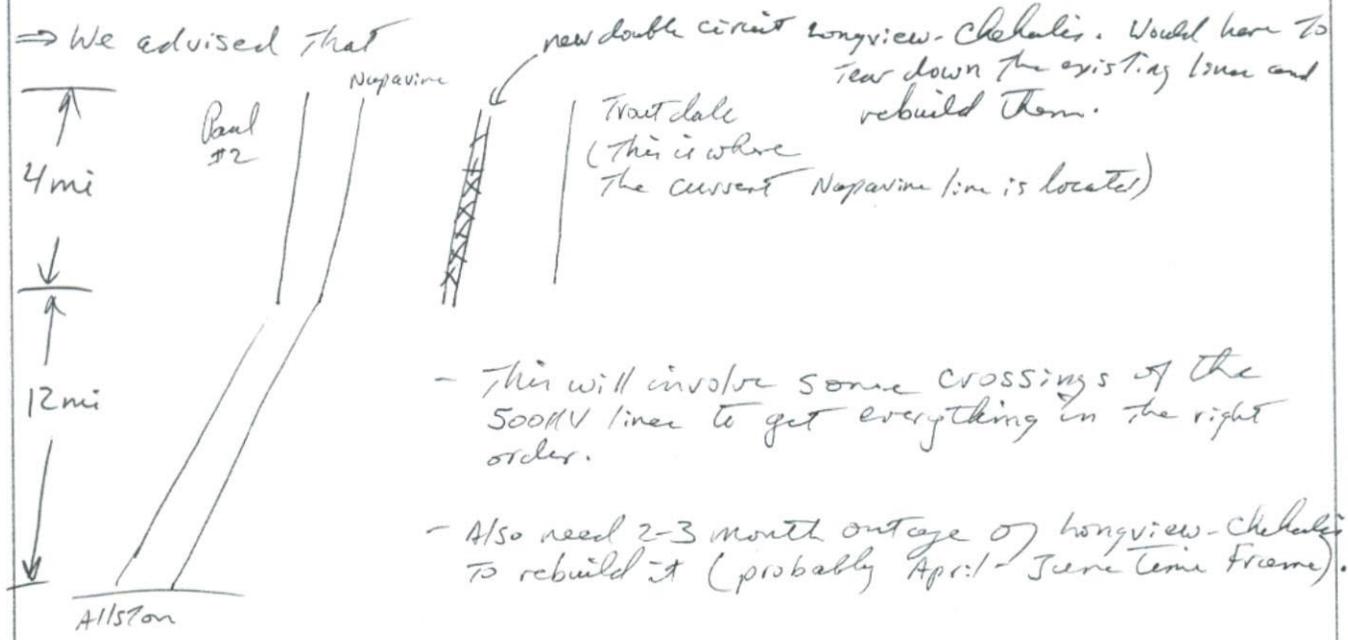
As these routing options are being considered, Planning recommends that the siting team also check with technical Operations (John Anasis and/or Mike Viles) and see whether they have specific concerns about any of the alternatives. The criteria that Operations must follow, differs in some instances from the Planning criteria and some of these potential line combinations may create issues for them.

Kendall

Castle Rock-Troutdale  
4/9/10

- Route 2 would have 500kV line adjacent to the Chehalis-Longview and Lexington-Longview 230kV lines.
- Route 1 would require the line to parallel the 230kV for about 4 spans around Lexington, lots of congestion (both lines and houses) in this area. Will also be a crossing Longview-Lexington 230kV.
- Route 9 Parallels Ross-Lexington 230kV all the way to Ross.

This is going to get into the whole issue of credible simultaneous outage of the 500kV & 230kV lines. Could become a big issue during outages.



Route 25 parallels the MCN-Ross 345 for a substantial distance. However a route 9 and 25 combo is what you would want to do if we ever want to drop a 500/230kV bank into Ross.

No matter what, we need to cross the 345kV line.

- In the crossing area, we may need to deal with the 230kV lines. Some options may require double circuit 500kV with one side operated at 230kV.
- A big concern is having extended outages of the N. Bonn-Ross lines due to support into Ross.

We and Planning may need to write up our needs and preferences (both end state and during construction) and provide that to Engineering.

- ~~Will~~ May need to take both N. Bonn - Troutdale O/S and the Troutdale 500/230 bank O/S to string stuff into the new Substation at Troutdale. Would leave only Big Eddy - Troutdale as the only support into Troutdale. Bad situation.  
- Need to come up with a way to have the 2 230KV lines and the bank out at the same time. <sup>not</sup>

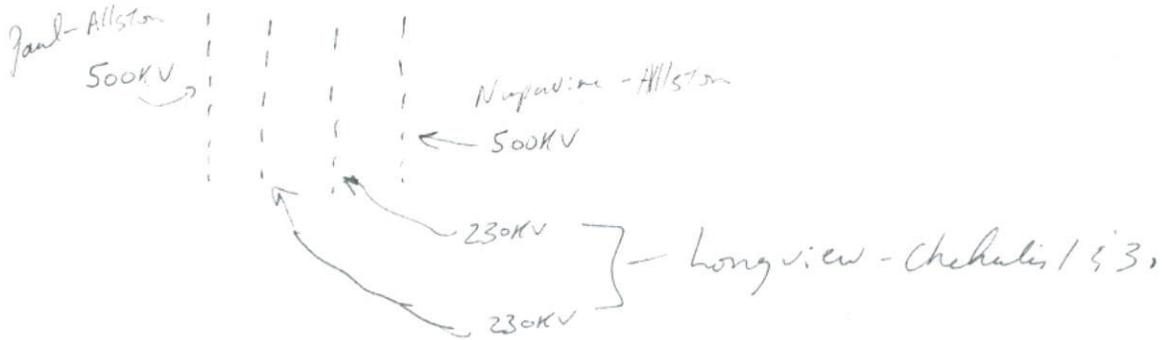
Basic map needs to be done by June 1.

Prelim design needs to be done by July 1.

Big concern: can we get the outages required to do the construction.

Castle Rock - Troutdale Team Meeting  
3/29/10

- Budget is OK, but schedule seems to be slipping some. Still have not been able to access to property owned by the large land owners (Longview, DNR, Weyhauser, etc).
- Around Castle Rock, the corridor will be arranged as:



- BPA still trying to nail down the location of the Castle Rock Substation. Issues of wetlands and rugged terrain.
- Series caps are planned for the new line. Issue of where to locate them. They'll have to go in either at Castle Rock or in a separate cap station.
- We have space constraints at both Castle Rock end and Troutdale end. GIS is a possibility, but is 3 times more expensive and there are issues with parts. Mark Korsness said to take the GIS option off the table.
- Troutdale has been laid out (including shunt caps and reactor). Can't get more land from Port of Portland or City of Troutdale, so the series caps have to go to Castle Rock. Means we need to build Castle Rock Sub as large as we need it.
- ★ This project really needs to deal with or allow for future expansion needs for the Portland area for the foreseeable future.

Kendall Rydell and Tony Bartolite to work to see if it would work to have Castle Rock Sub located at the northern site but the series caps at the Y site.

★ Design folks want to have a meeting with us and planning to discuss items like where and which lines might be put in common corridors, common towers, line crossings, etc to get our reaction from a reliability standards point of view. Mark Korsness to set this up.

Castle Rock - Troutdale Siting Meeting  
3/22/10

Looks like we are going with having the Paul-Hilton / Nopavine - Alliston line next to each other (but on separate towers) for about 41 miles up to the new substation (they already are next to each other for 12 miles below there).

- Next we would double circuit the Chehalis - Longview 230kV and then have the new Castle Rock - Troutdale sub on the outer edge.

⇒ - All this is to keep stuff in the same <sup>existing</sup> right of way.

- By May 1, how to have the route north of the Lewis River sorted out. Hope to have the route south of the Lewis worked out about 1 June.

- The key party we apparently need to work with is WA Dept of Natural Resources. Issues of routing and access. Routes south of Lewis River is the biggest concern they have.

Getting permission to enter property by the large land owners (Pacifi Corp, Weyerhaeuser, WA DNR) has not been given, so that impacts surveying and environmental work.

Design won't be done any sooner than July 1.

★ Depending on what scenario/route are looked at, we need to review what double circuiting, paralleling, and crossings will be required with existing BPA lines (esp. McNary - Ross 345, N. Bonn - Sifton - Ross, N. Bonn - Troutdale) so that we will know what new contingencies we will end up with. Could have an impact on preferred siting.

★ Also make sure to reinforce the crossing and make sure there is no OHGW at the crossing.

## Juj,Hardev S - TP-DITT-2

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, December 17, 2009 1:36 PM  
**To:** Wright,Stephen J - A-7  
**Cc:** Silverstein,Brian L - T-DITT2; Bekkedahl,Larry N - TE-DITT-2; Juj,Hardev S - TP-DITT-2; Beck,Gary O - TEP-TPP-1; Rodrigues,Melvin T - TPP-OPP-3; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Subject:** I-5 Segment 09 western most route

Steve, below is the write up from Planning concerning the Segment 09 alternative that would parallel the Ross-Lexington 230kV line on existing vacant right of way. Let us know if you have any other information needs in support of your making a decision regarding the proposed announcement.

Thanks.....Mark

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**From:** Rodrigues,Melvin T - TPP-OPP-3  
**Sent:** Thursday, December 17, 2009 10:56 AM  
**To:** Korsness,Mark A - TEP-TPP-2; Juj,Hardev S - TP-DITT-2; Radcliff,Tony P - TPP-OPP-3; Rydell,Kendall A - TPP-OPP-3  
**Cc:** Bekkedahl,Larry N - TE-DITT-2; Silverstein,Brian L - T-DITT2; Beck,Gary O - TEP-TPP-1  
**Subject:** RE: I-5

Hi Mark,  
As promised the following is the write up for addressing segment #9. If you have any questions, please call me or Kendall.  
Thanks  
Melvin

**The proposed route segment #9 of the I-5 Corridor Reinforcement project uses the existing Ross-Lexington 230kV right-of-way. Utilizing segment #9 will place the new Castle Rock- Troutdale 500kV line adjacent to the existing Ross-Lexington 230kV line in the same right-of-way. The WECC planning reliability criteria requires BPA to plan for the simultaneous loss of adjacent lines in the same right-of-way. The simultaneous loss of the new 500kV line with the Ross-Lexington 230kV line will become one of the critical outages for the South of Allston path. However, further analysis shows that the impacts of the outage can be mitigated, with no loss of path capacity, by adding a Remedial Action Scheme to trip generation. Therefore, BPA Planning believes the proposed route including segment #9 is an acceptable option for the I-5 Corridor Reinforcement project.**

## Juj,Hardev S - TP-DITT-2

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Wednesday, December 16, 2009 9:20 PM  
**To:** Silverstein,Brian L - T-DITT2  
**Cc:** Bekkedahl,Larry N - TE-DITT-2; Beck,Gary O - TEP-TPP-1; Juj,Hardev S - TP-DITT-2; Rodrigues,Melvin T - TPP-OPP-3; Delwiche,Gregory K - KE-4; Wittpenn,Nancy A - KEC-4  
**Subject:** FW: I-5 map

**Attachments:** I-5project08-18publiclettermap.pdf



I-5project08-18publiclettermap...

It is my understanding that building on the existing right of way next to Ross-Lexington (that would be route 09) fully meets the electrical requirements of the project, but that the fix just doesn't last as long in to the future as a new line all by itself. That is because we need to either de-rate the line or use fixes on the lower voltage system to get full capacity thus losing the ability to use those fixes later. I will work with Planning to give a more full explanation.  
Thanks.....Mark

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**From:** Silverstein,Brian L - T-DITT2  
**Sent:** Wednesday, December 16, 2009 8:45 PM  
**To:** Korsness,Mark A - TEP-TPP-2; Bekkedahl,Larry N - TE-DITT-2; Beck,Gary O - TEP-TPP-1; Juj,Hardev S - TP-DITT-2; Rodrigues,Melvin T - TPP-OPP-3; Delwiche,Gregory K - KE-4; Wittpenn,Nancy A - KEC-4  
**Subject:** RE: I-5

We offered Steve the opportunity to review the photos with you and he declined - he said he trusts your evaluation. His primary concern is that we don't find ourselves in a position where there is only one viable alternative. To that end, he asked that we evaluate how much capacity we lose on segment 29 because of the common corridor - is it so much that its not seen as economically feasible. He wants to be sure that we always have at least two viable alternatives. He wondered whether the east side segments are similar in terms of environmental concerns so that they also look like one alternative.

Meanwhile, we will review the draft communication plan and get it to Steve ASAP

Brian

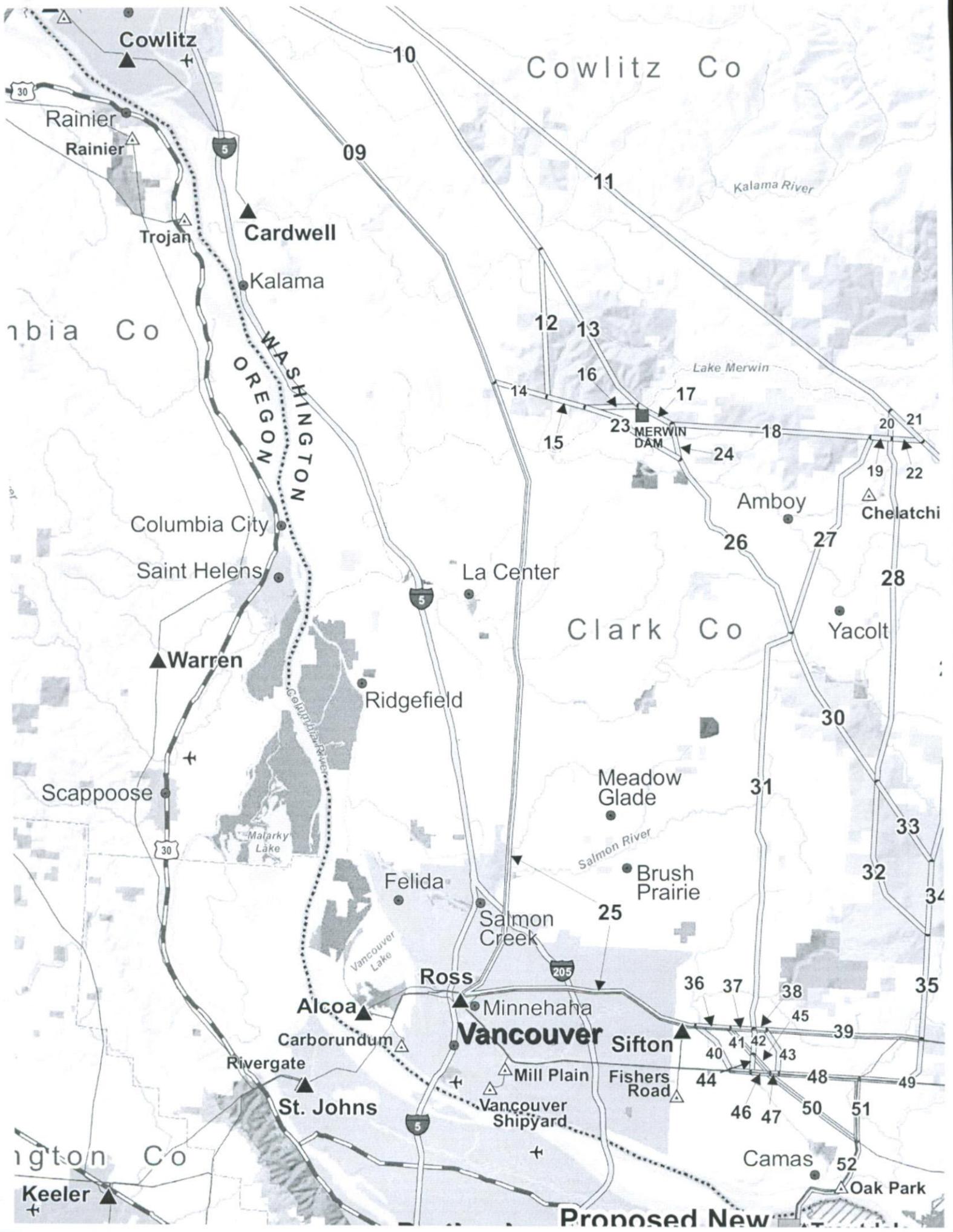
PS: plz send me another copy of the map. Steve took mine with him

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Wednesday, December 16, 2009 7:52 PM  
**To:** Silverstein,Brian L - T-DITT2; Bekkedahl,Larry N - TE-DITT-2; Beck,Gary O - TEP-TPP-1  
**Subject:** I-5

Brian, just to confirm, if you are able to get some time with Steve tomorrow or Friday, I can make myself available to briefly explain the different routes under consideration on the project map. It might help him understand why announcing the dropping of route 31 now is such a clear and important decision for us.  
Thanks.....Mark





**Asgharian,Maryam A - DKE-7**

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**From:** Korsness,Mark A - TEP-TPP-2  
**Sent:** Thursday, October 15, 2009 10:39 AM  
**To:** Klumpp,Elizabeth C - DKR-WSGL  
**Cc:** Wittpenn,Nancy A - KEC-4; Asgharian,Maryam A - DKE-7; Rydell,Kendall A - TPP-OPP-3; Driessen,Laurens C; Johns,Michael C - TEP-TPP-1; Grover,John J - TELP-TPP-3  
**Subject:** I-5

Liz, in response to your question:

Reduced capacity on the Ross-Lexington route will be discussed along with all the other benefits and negatives for each route in the DEIS. Depending on the conditions of the operating system at the time we put pen to paper, at what planning wants to do to mitigate by addressing other lines at the same time, we may show a big impact or just a little impact to capacity. Since we have no preferred route at this time, we don't need to do much to compare the different routes yet with just partial data. OK to talk about it though.

Thanks.....Mark