



## Energy Efficiency Post-2011 Phase 2

### Workgroup 3 Meeting 3

August 18, 2010  
9:00am to 12:00pm  
Conference Call

#### Overview

- Workgroup 3 reviewed the notes from meeting 2. No issues were raised.
- Utility Potential Calculator Demonstration
- Workgroup discussed the objectives of a Data Collection Subgroup.

#### Decision/Action Items

- Data Collection Subgroup meeting on August 25<sup>th</sup>.

#### Meeting Notes<sup>1</sup>

##### *Facilitators:*

Andrew Miller, BPA

Jill Steiner, Snohomish PUD

##### *BPA Participants:*

Matt Tidwell

##### *Guest Participants:*

Kevin Smit, EES Consulting

Brendan O'Donnell, EES Consulting

**N.B. The notes below are not comprehensive due to the Utility Potential Calculator demonstration that took place (available at the end of the notes).**

1. AM: Meeting introduction
2. Person A: Background for Potential Tool development. The need for assessments is increasing; they can be expensive so where does this leave the smaller utilities. BPA thought it would be helpful to bridge the gap between the Council's basic tool and a real comprehensive assessment. We have developed a handbook which will come out at the same time as the calculator.
3. Person A: it's a high level tool to give you a quick shot at potential. Not as comprehensive. Initial goal was to give smaller utilities some benefit. Those who have tested it have actually been larger utilities so applicable to all utilities. Based

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<sup>1</sup> Due to privacy concerns, only BPA staff and workgroup co-chairs are listed in these meeting notes.

- exclusively on 6<sup>th</sup> power plan measures. Not utility specific, some things still based on regional characteristics. Does not provide primary research; does not do the data creation for you. Also not intended to set targets, just a tool to help assess the potential in a service territory.
4. Person B: on introductory slide, last bullet point is interesting to me; not to be used for conservation requirements, but what about I-937s.
  5. Person A: it would complement the I-937s; would meet the requirements. The bullet is meant to say that BPA will not hold you to the analysis/numbers.
  6. Person B: that clarifies it.
  7. Person A: You can customize the Council's models and excel files and adjust the inputs and re-run things customized to your own service territory. The graph indicates the things you can change.
  8. Person B: The shaded detail under UPC, what does that represent? More specific to the utility?
  9. Person A: the parameters in the UPC that you can modify beyond the Target Calculator.
  10. Person B: can you define avoided cost.
  11. Person A: for I-937s it's a forecast of market prices in the UPC.
  12. Person B: the dilemma I have is, page 422 of the Power Plan, the last statement on the page the entire implication is for I-937s, "utilities may make judgment on their own." Because our marginal resource doesn't look anything like the region, ours is a renewable project, I would presume our avoided cost is higher than the region.
  13. Person A: this is why if you have the capacity to do a custom CPA, you should do that. BPA isn't saying you should do this or that; just saying this is better than the Council calculator, but not as specific as a comprehensive study.
  14. Person A: Slide 5 discussion.
  15. Person A: Slide 6, data needs: you still need data, it doesn't provide it for you.
  16. Person ?: Can you provide the presentation?
  17. Person A: Yes.
  18. Person A: There are some data inputs that are not changed, e.g. measure cost, savings. So you need customer characteristics data and measure data. The UPC gives you ability to customize the customer characteristics data.
  19. Person C: Demo was set up as an Excel file with macros. Residential Tab.
  20. Person C: Commercial Tab.
  21. Person D: what is the difference between Large, medium and small office space?
  22. Person C: the questions come from the Council.
  23. JS: this area was particularly difficult for us when we were doing our beta test.
  24. Person E: is anyone giving consideration to some sort of survey template for the questions that would be beneficial for using this tool.
  25. Person A: we have a standard data request, which could be sent out.
  26. JS: so that we have better data next time around, we plan to map our CIS data to information in a database (e.g., D&B, Hoover's, others) and create a combined record for each of our commercial accounts.
  27. Person D: this is a bit overwhelming. How do you decide which accounts fall into these different categories.

28. Person B: sometimes the county assessor records are useful.
29. JS: county may have square footage data, but might not be much else.
30. Person B: county data is a good starting point.
31. Person D: I have a list of all our customers and what they do, but we'd probably have to look at each account and assign a category. I see as this being a very large project.
32. Person B: does the county assessor square footage record just condition space or entire footprint of the building?
33. JS: the county assessor can give you the data in a database and you can attempt mapping and match records.
34. Person A: If you don't have square footage or want to do some cross checking you can subdivide by load.
35. Person B: large is 100k, medium is 20k to 100k and small is 0 to 20k. This is from the Council and BPA's definitions. Big box retail is bigger than 50k.
36. Person A: we'll look into where to reference the definitions.
37. Person C: another option is the number of buildings and number of employees, which is helpful/reasonable for smaller utilities. Another method for backing out square footage. If you have a combination of all three of these, you could use the tool that way as well. The Council determined their estimates by using number of employees. We're not sure if this employee information would be more available.
38. Person A: we found that there need to be multiple ways to determine square footage, so this is why the model contains these options.
39. Person C: Industrial Tab: we found that industrial is pretty straightforward.
40. Person A: this time around for the 6<sup>th</sup> power plan, the Council did a pretty comprehensive review of Industrial. It's pretty robust; it all starts with your load.
41. JS: again, it would be great to come up with a standard mapping of the categories. If we agree to look at the C&I sectors; my understanding is that the building types used by Council is different from NEEA. There should be uniformity. We have to update our codes (SIC to NAICS) and it would be nice if there was some guidance on this.
42. Person D: can you talk more about annual growth rate.
43. Person C: they are Council-based; an economic forecast of sorts by category.
44. Person C: Distribution Efficiency Tab:
45. Person H: these numbers for distribution efficiency aren't very good. One question that needs to be resolved: can you use the calculator for just residential and nothing else or do you have to use it for everything.
46. Person C: there is no have to; you could use it just for residential or any other sector. Pick and choose.
47. Person C: Ag Tab:
48. Person C: Output-Savings Tab:
49. Person I: Is there a way to calculate levelized cost?
50. Person A: the tool was created as a calculator, not as a means to compare costs of generation.
51. JS: the tool doesn't do scenario analysis, e.g. different growth rates in different sectors, but you could put those in the model.
52. Person A: right, but it's not super robust.

53. Person F: looks really good. Because we have five year plans, things get a little stale when you move away from the initial years of a plan. Would be nice to be able to update, e.g. by the fourth year.
54. Person C: we are going to have measure saturation options. This is treated pretty much like the 6<sup>th</sup> plan; it's all in there.

Break

1. AM: Looking for feedback on the demo.
2. Person I: I brought up the levelized cost. Is there anybody else interested in this aspect?
3. JS: In terms of the output of the tool to provide levelized cost by sector or total? We would be interested as well. In terms of determining least cost resource.
4. AM: wrote this issue down to give back to EES Consulting. Any other feedback? It was clear that it was not created to provide utility specific data; more of a high level assessment.
5. Person G: It appeared that there wasn't enough to do an Option 3 analysis. Is that right?
6. JS: it would fall short of that. There are things missing if you wanted to do a "full" assessment. From the I-937 standpoint, it would be interesting to demo this tool with the state auditor at some point.
7. JS: I would envision two ninety minute discussion in the next week and people that are interested in Residential and C&I to have a robust discussion on "what a utility would need in terms of data collection and analysis" in order to use the tool. To look at what opportunities exist to coordinate data collection and discuss how BPA could coordinate or facilitate this. Wednesday the 25<sup>th</sup>, 8am to 9:30am (residential) and then 10am to 11am (C&I). If we don't get through the discussion on C&I, we could schedule some additional time. *[These sub-workgroup meetings were held on August 25<sup>th</sup>. Results will be discussed at the Sept. 1 meeting.]*
8. AM: interest in having an in-person meeting.
9. Person H: I will be out of the office; not sure if week before Labor Day is good.
10. JS: the 15<sup>th</sup> of September is better for an in-person meeting. *[In-person meeting will take place at a later date to be determined on September 1.]*

# BPA's Utility Potential Calculator

Conservation Potential Assessment Work Group  
Meeting  
August 18, 2010

Kevin Smit  
Brendan O'Donnell



# Background

- Understanding your energy efficiency potential is increasingly more important
  - Tiered Rates
  - 6<sup>th</sup> Plan
  - I-937 in Washington
- Comprehensive potential studies can be costly, particularly for smaller utilities
- BPA has developed a new tool to bridge the gap between the high level “target calculator” and a comprehensive conservation potential assessment
- Also developed “Guidebook for Potential Studies in the Northwest”

# Utility Potential Calculator

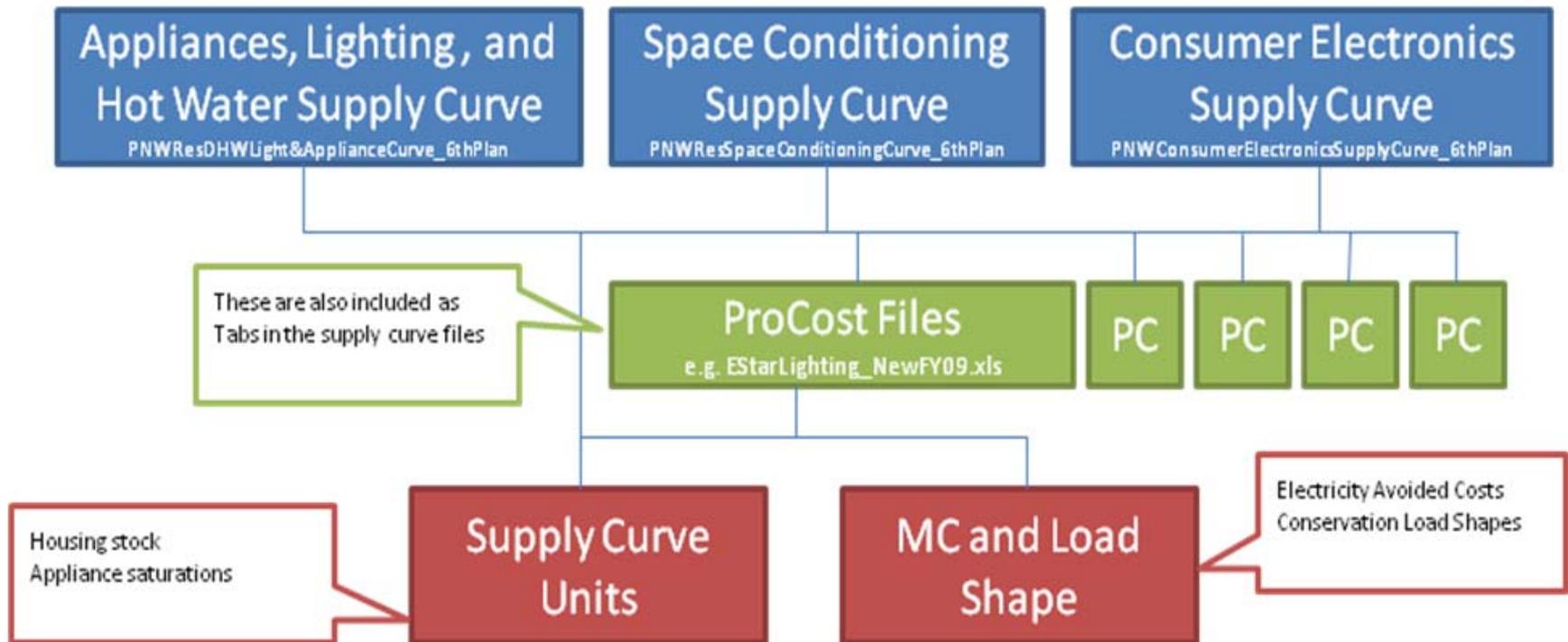
- What is the Utility Potential Calculator (UPC)?
  - High level calculator to provide quick estimates of energy efficiency potential
  - Bridge the gap between full/comprehensive CPA and the Target Calculator
  - Enable smaller utilities to get quick and meaningful results
  - Results are customized based on utility customer characteristics
  - Based on Sixth Power Plan measures
- What the UPC is not:
  - Detailed, utility-specific potential study
  - Primary research to understand customer characteristics
  - Not intended to be used to set conservation requirements

# Options for Estimating Potential

- Council's Target Calculator
- Utility Potential Calculator (UPC)
- Custom Utility Potential Study
- Customize the Council Model

	<i>Utility Location</i>	<i>Residential Load</i>	<i>Commercial Load</i>	<i>Industrial Load</i>	<i>Housing Stock</i>	<i>Appliance Saturation</i>	<i>Heat Type</i>	<i>Building Vintages</i>	<i>Commercial Stock</i>	<i>Industry Types</i>	<i>Demolition/Growth Rates</i>	<i>Avoided Cost</i>	<i>Technical Measure Data</i>	<i>Ramp Rates</i>	<i>Utility Data*</i>
Target Calculator	X	X	X	X											
UPC	X	X	X	X	X	X	X	X	X	X	X				
Full Potential Study	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Council Models	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*Including finance rates, line losses, admin cost															

# Council Residential Model Structure



# Data Needs

- Yes, you still need data
- Customer characteristics
  - Residential: Total housing units, housing type, foundation, heating type, vintage and appliance saturations, cooling, heating and solar zones and growth and demolition rates.
  - Commercial: square footage by sub-sector
  - Industrial: load by sub-sector
  - Agriculture: Total number of irrigated acres, dairy farms in their territory
- Data not changed: Council measures
  - Measure Cost
  - Savings
  - Life
  - Achievability
  - Applicability
  - Avoided Cost

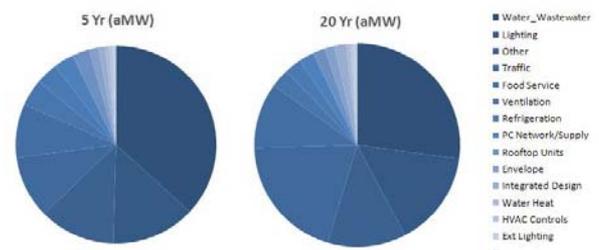
# Demonstration...

RESIDENTIAL			RESET		
Heating Zone	Cooling Zone	Solar Zone			
I	I	I			
Residential Households		Total Population			
10,000		30,000			
Housing Stock	Service Territory %	Regional %	Housing Appliances	Saturation %	Regional %
House Type			Water Heating		
Single Family	72%	72%	Electric	64%	64%
Multi-Family	18%	18%	Natural Gas	36%	36%
Manufactured Homes	10%	10%	Appliance Saturation		
Housing Vintage			Refrigerator	112%	112%
Pre-1980	72%	72%	Freezer	57%	57%
1980 - 1993	18%	18%	Clothes Washer	87%	87%
Post 1993	10%	10%	Electric Dryer	82%	82%
Heat Fuel Type			Dishwasher	67%	67%
Natural Gas Homes	37%	37%	Electric Oven	82%	82%
Electric Homes	53%	53%			
Other Fuel Homes	10%	10%			
Electric Heat System Type					
Forced Air Furnace	34%	34%			
Heat Pump	20%	20%			
Zonal (Baseboard)	44%	44%			
Electric Other	2%	2%			
Single Family Foundation Type					
Crawlspace	64%	64%			
Full Basement	23%	23%			
Slab on Grade					

Demolition	Annual Rate	Regional Rate
Single Family	-0.23%	-0.23%
Multi-Family	-0.23%	-0.23%
Manufactured Homes	-1.07%	-1.07%
Growth Rate	Annual Rate	Regional Rate
	1%	1%

Sector Summary

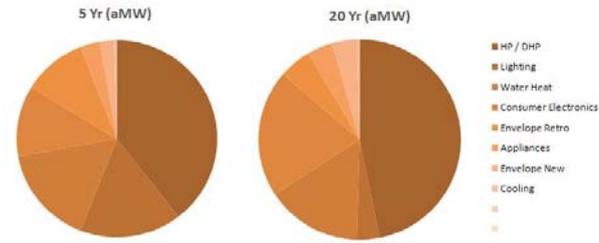
Commercial	5 Yr (aMW)	20 Yr (aMW)
Water_Wastewater	0.019	0.076
Lighting	0.007	0.043
Other	0.006	0.035
Traffic	0.005	0.068
Food Service	0.005	0.029
Ventilation	0.002	0.008
Refrigeration	0.002	0.007
PC Network/Supply	0.002	0.007
Rooftop Units	0.001	0.005
Envelope	0.001	0.004
Integrated Design	0.001	0.005
Water Heat	0.000	0.002
HVAC Controls	0.000	0.001
Ext Lighting	0.000	0.002



INDUSTRIAL		
Annual Base Load in 2007	MWh	Annual Growth Rate (Regional Average)
Mechanical Pulp	0	0.46%
Kraft Pulp	0	0.66%
Paper	5,000	-0.11%
Foundries	0	-1.07%
Frozen Food	0	-0.40%
Other Food	0	0.20%
Sugar	0	-0.05%
Lumber	40,000	-1.10%
Panel	0	-1.01%
Wood	0	0.16%
Electric Fabrication	0	0.60%
Silicon	0	-1.01%
Metal Fabrication	0	0.92%
Equipment	0	-2.02%
Cold Storage	25,000	2.19%
Fruit Storage	0	2.22%
Refinery	0	-1.38%
Chemical	0	0.28%
Miscellaneous Manufacturing	0	0.50%
<b>Total</b>	<b>70,000</b>	

Reset Growth Rates

Residential	5 Yr (aMW)	20 Yr (aMW)
HP / DHP	0.224	1.583
Lighting	0.095	0.121
Water Heat	0.092	0.516
Consumer Electronics	0.065	0.695
Envelope Retro	0.059	0.176
Appliances	0.018	0.137
Envelope New	0.013	0.135
Cooling	0.002	0.013



# Next Steps and Contact Information

- Next Steps (Check with BPA for Schedule)
  - A few more enhancements during July & August
  - Release after that

- EES Consulting:

Kevin Smit

Manager, DSM

[smit@eesconsulting.com](mailto:smit@eesconsulting.com)

425-889-2700

- Bonneville Power Administration:

Lauren Gage

Evaluation and Market Research Lead

[lsmgage@bpa.gov](mailto:lsmgage@bpa.gov)

503-230-4961