**WUTC Tag Meeting #5**

**Date & Time**: 9/18/2018, 09:00 AM – 12:15 PM

**Location**: SeaTac Conference Center – Seoul Room

**In attendance**: Mark Sellers-Vaughn, Brian Robertson, Devin McGreal, Ashton Davis, Kyle Frankiewich, Andrew Rector & Carolyn Stone.

**Called in**: Bruce Folsom, Bob Morman, Amanda Sargent, Monica Cowlishaw, Eric Wood, Cory Dahl (Washington State Attorney General’s Office)

**Minutes by**: Carolyn P Stone

Brian went over the Agenda for this meeting and went through introductions.

**Tag 4 Recap**, *Agenda item #3*

* Mark stated that feedback on the IRP has been very good. There are some tweaks needing done. Mark thanked Staff for their input!

***Presentation #1* - Summary of Additional Potential Resources** (Mark Sellers-Vaughn)

**Question**: Andrew asked about the GTN North to South transportation?

**Answer**: Mark and Brian both answered that this is a “bi-directional” transport which requires use of RUBY pipeline. This is incremental transportation, north to south, King to Malin and using NOVA/Foothills transmission.

**Question**: Kyle asked if you have to use Malin to get the gas transported?

**Answer**: Mark said we use Incremental NWP, north to south or south to north. Eric stated that transporting to Malin directly would use a higher pricing structure. King to Malin destination is California, so prices would be higher than at Sumas. We transport via RUBY to Malin to Turquoise Flats. Mark said CNGC has not recently been purchasing gas at Malin, but has in the past. Incremental transport bilateral = WCT to King, Trail west, this is the “lavender” line on the graph on Slide #5.

* Devin gave an update on proposals, the Bremerton/Shelton proposal Is still being modeled. During the next few weeks he said they will present results.
* Mark remarked that it appears the Shelton proposal makes sense!

**Question**: Kyle asked if the GSOC makes the decision on proposals?

**Answer**: Mark said it will be presented to GSOC, they will ask questions and then yes, they make the final decision.

* Mark commented that GSOC often will need to make quick decisions. This is a unique portion of our system, timing, complications in process, non-conforming agreements… decision…if it won’t have to go through FERC.

**Question**: Andrew asked, “What non-confirming agreements?”

**Answer**: Mark explained that it has to do with how the pipeline posts capacity. There is a “Confidentiality Agreement” in place with PSE. In this case, it wouldn’t get posted so it NWP must go to FERC to say that not posting it won’t harm others in the market. It took a while to figure this out!

**Question**: Kyle asked if CNGC would get an “approval” or not?

**Answer**: Mark said it is not an approval, it is more a “non-action” or “statement”. Kyle remarked, then we need to get this. Mark said we already have it!

**Additional Potential Resources**, Slide #6 (Brian Robertson)

* Brian explained, this slide shows incremental storage including Jackson Prairie, Plymouth, Mist and AECO Hub.
* South and west shows Wild Goose, Gill Ranch (modeling shows this CA transport is high $).
* Clay Basin, Spire (previously Ryckman Creek), and Magnum.

***Presentation #2*, Components of Candidate Portfolios** (Ashton Davis)

* Ashton introduced Slide #8 as the “Resource Optimization Process Flow”.
* The area in red, Ashton said, is where we are focusing
* Steps 5,6,7 & 8 identify the preferred portfolio…Devin stated portfolios are still “candidates” though, until they go through the full process!

**Question**: Andrew asked the definition of VaR?

**Answer**: Devin said VaR means “Value at Risk”. It is a risk analysis to put a tangible number to the most you could lose during a given time frame. This is a way to say in extreme conditions, what is the worst-case scenario?

**Recap – As-is Shortfalls (Dth)**, Slide #9, (Ashton Davis)

* Ashton said at the last TAG meeting, there were GTN shortfalls. Citygates on GTN are in Oregon.
* Devin added that there are no shortfalls in Washington. Brian interjected stating the Zone 30-S and the Bremerton (Shelton) deal were still being analyzed.
* Mark stated that CNGC’s system is geographically diverse – we have more delivery rights than receipt rights! We are assuming how gas will flow on peak day but can’t guess how bi-directional gas will flow on NWP. The Bremerton/Shelton gives us capacity that is not used, but could be a shortfall if someone else picks up that capacity! Still fine-tuning portions of this. Part of the Portfolio’s purpose is to fix an overall issue.
* Devin said, at a certain point, we will identify shortfalls, but modeling can do more than that! Modeling gives price spread information which helps bring down cost.

**List of Candidate Portfolios**, Slide #10 (Ashton Davis)

* There are 6 candidate portfolios:
  + All-In, NWP transportation only, NWP + Storage, GTN transportation only, GTN + Storage, and Storage only.

**All-In Portfolio**, Slide 11 (Ashton Davis)

* Ashton said, the All-In Portfolio is the best deterministic mix of all alternative resources. We throw it all in and it gives us the best selection of solutions.

**All-In Portfolio – SENDOUT Suggested Resource Mix**, Slide #12 (Devin McGreal)

* Incremental GTN capacity from Stanfield…
* Incremental GTN capacity from Kingsgate…
* Monitor Incremental NOVA (until 2038, when we will add capacity in)
* Spire, 1,000 Dth in 2019

**Question**: Andrew asked about “monitoring”?

**Answer**: Devin and Ashton said keeping availability and pricing in mind. Mark said we monitor it per Staff…. NOVA and Malin particularly because of the shortfall.

* Devin asked why the capacity to Stanfield is so attractive… Mark said because GTN has mileage based transport rates. The Bremerton/Shelton proposal puts the shortfall closer to the Citygate. If there is a shorter way to go, we get a discount from Stanfield to Bend to Madras with the Bremerton/Shelton possibility!
* Kyle recalled that in the NWP proposal at the last Tag meeting, NWP brought this point up. This “sweetened” the deal. Mark said NWP would prefer we use them rather than us picking up additional RUBY capacity!
* Ashton said the selected “Spire” (formerly Ryckman Creek) has reliability issues. Ryckman Creek went through multiple bankruptcies, etc.

**Question**: Kyle send SENDOUT is deterministic and resource optimistic…?

**Answer**: Ashton said “Yes”! There is no way for SENDOUT to quantify reliability!

* Devin said that Spire will be under new management now and it will be explored further. CNGC may talk to the new management.
* Mark said they may give them more consideration in the Portfolio!

**Question**: Andrew asked… in 2019, hypothetically if you decide Spire is not a good idea, where would you get the extra 1K dth’s?

**Answer**: Devin said, the 1,000 is a max # per day storage capacity, but not really needed. The 1,000 dth’s do not solve a shortfall.

**GTN Only Portfolio**, Slide 13 (Ashton Davis)

* The next portfolios are not as robust as the “All-In”, which is based on the best deterministic mix
* Devin said it gives you a reference point, i.e. what if something happens at NWP for example. We can then refer back to the 2018 IRP, so all Portfolios are very important!

**Question**: Kyle asked are the Portfolios now realistic options or “sky is falling” type?

**Answer**: Devin said 1. In a perfect world, we would do an All-In” gas and “All-In” Solar, but we have gas only. We used the same method previously and no feedback from Staff. Mark added that it is considered “best practice” at this point. This is not an emergency preparedness plan! However, we probably should be thinking about such things as terrorist attacks, etc.

* Devin reminded attendees that in the GTN only Portfolio, we are keeping all the NWP contracts. These are only ***incremental*** resources! This gives us real, tangible results. The All-In Portfolio will have NWP/GTN solutions, then we run through stochastic modeling and then it could show one of them is too expensive.
* Ashton said if we get better at quantifying risk, the Portfolios could get a lot more interesting!

**Question**: Kyle asked if getting more stochastic analysis numbers would make modeling more accurate?

**Answer**: Ashton “Yes!” Using deterministic results, the All-In” is as the top candidate Portfolio because it is fully served and the least cost option.

**GTN Only Portfolio – SENDOUT Suggested Resource Mix**, Slide #14 (Ashton Davis?)

* In the GTN Portfolio, we are hiding all NWP incremental resource
* It said to increase GTN from Stanfield capacity by 2,038
* It said to increase from Kingsgate
* Requests incremental NOVA

**NWP Only Portfolio**, Slide #17 (Ashton Davis)

* Bremerton Shelton realignment, shortfalls are on GTN mostly!

**NWP Only Plus Storage Portfolio**, Slide #19 (Ashton Davis)

* Incremental NWP North to South!

**NWP Plus Storage Portfolio – SENDOUT Suggested Resource Mix** - Slide #20 (Ashton Davis)

* Bremerton Shelton realignment
* Spire storage – 1,000 Dth

**Storage Only Portfolio**, Slide #21, (Ashton Davis)

* Spire, 1000 in 2019

**Summary of – SENDOUT Suggested Resources by Portfolio**, Slide 23, (Ashton Davis)

* Red boxes are not considered for Portfolio
* Yellow are considered but not selected by SENDOUT
* Green are selected resources for the Portfolio

**Question**: Devin asked Staff if this format works?

**Answer**: Andrew replied that it seems OK to him.

**Question**: Andrew asked…just to clarify, red falls outside of Portfolio?

**Answer**: Devin said “Yes”.

**Question**: Kyle said red shows deterministic limitations on the Portfolio?

**Answer**: Devin said “Yes”.

* Kyle remarked that this is clear, we want to do analysis to determine resources that make sense. This is consistent and clear!

**Question**: Kyle asked about a “piece of the puzzle” – how you made decisions on what resources to limit or choose…. trying to think, if this is the scenario – buys only GTN, no NWP, this wouldn’t occur….?

**Answer**: Ashton says it boils down to a “gas only” solution. If you want some other competitive Portfolio let us know…where resources compete. We are wide open to suggestions!

**Question**: Kyle asked could you do all storage with needed capacity to get to the storage?

**Answer:** Devin said, the storage option includes transportation, but no other options.

**Question**: Kyle said if you make available storage in California but with no transport, then

will it not work?

**Answer**:Devin said, Gill Ranch for example, we can buy storage capacity then put it on transport to get to the storage. Mark said we want to avoid arbitrariness, if 20K GTN capacity, then we determine Portfolio, it feels too arbitrary. We try to take the “arbitrariness” out!

**Methodology Behind Ranking of Portfolios**, Slide #24, (Ashton Davis)

1. Combination of deterministic results to identify the intrinsic value of the Portfolio and VaR analysis, to capture the extrinsic dollar value. For example, if you are thinking of going to college, what are the intrinsic and extrinsic values associated?
2. Ranked on peak day unserved demand and on total system costs.
3. Deterministic results, given 75% weight and stochastic results, 25% weight.

**Final Ranking of Portfolios**, Slide #25 (Ashton Davis)

* Risk-Adjusted results based on the 75/25 split.
* Deterministic, Stochastic, then Risk-Adjusted results.
* These numbers in MDT (Mega Dth’s) and dollars in billions ($000)

**Top Ranked Candidate Portfolio Components**, Slide 26 (Ashton Davis)

1. Bremerton Shelton realignment
2. Incremental GTN capacity from Stanfield
3. Incremental GTN capacity from Kingsgate
4. Monitor incremental NOVA

**Question**: Carolyn asked how often the SENDOUT and stochastic modeling is done?

**Answer**: Brian said it is run for every IRP, or again if changes occur.

* Brian stated that “Step 4” is where we rank them, and there is lots of analysis including with Spire and without Spire.
* Kyle stated, if removing Spire is a management decision, what’s preventing it from being included as a “continue exploring” item. If it is cost effective, you would need an explanation to Commissioners why not? Answer “not yet” so future needs are better understood. Continued analysis of Spire sounds good.
* Mark said we can add this to GSOC in the last section of the Alternative Resources portion. Put up analysis of Spire or other options…?

***Presentation #3*, New Stochastic Methodology** (Ashton Davis)

* Ashton said in previous IRP’s they used Monte Carlo IN SENDOUT and it took days! In 2018 using R for the Monte Carlo simulation.
* Devin said it doesn’t need to run 10K runs. We can do stochastic analysis outside of SENDOUT on only what we need!
* Ashton aid CNGC is doing 10K Monte Carlo simulation of weather and prices using R.
* Brian said in the past they only ran 200 draws, this is exponentially more!

**Cascade’s new Methodology**, Slide #30 (Ashton Davis)

1. We run 1 draw of Monte Carlo simulation for the first weather location**.**
2. Random seed is used each day for draw, then run thru “Cholesky Decomposition Matrix” (CDM). This is commonly used with Monte Carlo simulations. The Monte Carlo generates up correlated numbers, the CDM shows their correlation: Gives new weather profile – more realistic! Helps to give the 10K valuable draws!

**Question**: Andrew said it is not clear how the CDM figures the right numbers?

**Answer**: Ashton said Historical values.

**Question**: Kyle said it shows the magnitude of the correlation?

**Answer**: Devin answered “Yes!”

***Presentation #4*, Scenario and Sensitivity Results** (Devin McGreal)

**Peak Day Take Vs. Demand**, Slide #34 (Devin McGreal)

* Devin said this shows how the top candidate Portfolio gets its gas!

**HDD Draw Graph – January 1st**, Slide #35 (Devin McGreal)

* How resources of stochastic analysis work
* Shows the noise we want to capture!

**Question**: Kyle asked what sort of system weighting is used?

**Answer**: Devin said all 7 weather locations are assigned a weight. Brian said we take the demographics and increase by 1 HDD to see how it impacts demand. It increases total demand.

**Question**: Kyle asked if correlated and separate HDD’s and turn into 1 system HDD? Do we know system wide? Could it be a mismatch? Is HDD a good proxy of revenue/cost requirements?

**Answer**: Devin said it does. If you have a draw of the highest HDD’s, you will have to buy supply and increase costs more than for 1 peak event.

**High Growth – Peak Day Unserved Demand**, Slide #37 (Devin McGreal )

* 99 Percentile of weather
* In 2038, a large peak event!
* Potential unserved demand

**Question**: Question was asked, are you not planning for uncertain demand?

**Answer**: Devin said the scenarios = demand impacting externalities, the sensitivity includes mostly price forecasts. We don’t plan for this, we use it as a tool. We would want to know what total system costs are in this scenario.

**High Growth Discussion**, Slide #38, (Devin McGreal)

* Major shortfalls in 2038
* Does not invalidate ranked Portfolio!
* The low growth scenario was brought up and Brian said that is usually “ho hum”, but if we do an expected low growth scenario that might push back as a shortfall and this is important information to keep in mind!

**Carbon Sensitivity Discussion**, Slide #39, (Devin McGreal)

* There are 3 different carbon sensitivities:
  + I-1631 Ballot
  + SB 6203 Carbon Tax
  + House of Rep Market Choice
* Model shows that conservative program is robust and comprehensive so will meet DSM savings at a lower than expected carbon future.
* Amanda said at 1% and 3% over long term in her analysis – over full-time horizon not a meaningful difference!

**Change to DSM Forecast Discussion**, (Devin McGreal)

* DSM feasibility of new measures to programs, the #’s will be in the IRP. We consult with

Applied Energy Group (AEG).

**Scenario/Sensitivity vs Cost Limit**, Slide #42, (Devin McGreal)

* 1.2X total system cost
* Any show an extremely high cost?
* VaR limit is manager set
* No method to fully set VaR limit
* At what point are you at risk? …$6,035,244,000!
* High growth, high cost as expected

**Question**: Staff asked…BC Supply looks better for us…why?

**Answer**: Devin said there is a lot of unserved demand in this scenario. If any kind of catastrophe – confirms no other solution. *Unserved* shows *not served* by SENDOUT model.

**Conclusion**, Slide #43 (all)

* Identified shortfalls in GTN start in 2023 in the top-ranking Portfolio
* Under expected conditions this Portfolio eliminates GTN
* This Portfolio passes all scenario and sensitivity testing.
* This is Cascade’s preferred Portfolio

**Question**: Carolyn asked if the decision to use this Portfolio is by GSOC?

**Answer**: Mark said the decision first goes thru Chris & Eric and himself then to Kevin Connell, then if Kevin OK’s it, it is presented to GSOC for final decision.

**Question**: Andrew asked if all the analysis is done?

**Answer**: Mark replied that a little still needs done and double checking. Because our system is so unique you almost have to go through this line by line…i.e. does it make logical sense, can it flow operationally…is it realistic…can you really do it??

***Presentation #5*, Proposed Two-Year Action Plan** (Devin McGreal)

**Environmental Policy**, Slide #45 (Brian Robertson)

* Participation in environmental discussions and on committees
* Monitor service areas
* Monitor carbon pricing and policy development (WA ballot, carton tax, “Market Choice”)
* Monitor federal and state Green House Gas (GHG) regulation
* Monitor current emission reduction & monitor endeavors (methane & renewable gas studies)
* Monica said they are keeping us much more aware of what is out there. We are keeping an eye on it and what we see, we take back to the Resource Planning team!
* Amanda said that for Bellingham regarding equipment to add to the Portfolio, we’ve been considering it and offering rebates.
* Devin said, that would change the DSM numbers.

**DSM**, Slide #46 (Brian Robertson)

* Brian said technical review of new measures
* Amanda said NEAA Board Meeting last Thursday voted to be on board – moving along with a 2-year plan. This is the 1st step to increasing our engagement with Jim Snyder with the Commission. We will continue!

**Question**: Carolyn asked if DSM is included in the Portfolio analysis?

**Answer**: Devin said it IS input as free supply, though it is not “free”, it acts to decrement demand…. we can add a dotted line to graph to show this!

**DSM (Continued)**, Slide #47 (Brian Robertson)

* Kyle encouraged company and staff to tie these two pieces together! Closing the loop on this…i.e. “We said in IRP we would do this and this is how we will do it,” ...connecting things would help!
* Monica said we do include it, but we will expand on it from a strategic perspective.

**Gas Supply**, Slide #48 (Brian Robertson)

* Hedging Plan Docket – UG 132019, in 2018 make a recommendation
* Add in monitor Spire & NOVA!

**Avoided Cost**, Slide #49 (Brian Robertson)

* Implementation of a risk premium

**Question**: Staff asked about “rulemaking on Avoided Cost in Oregon”?

**Answer**: Devin said we are required to file Avoided Cost with the commission for approval, so working with the LDC’s together on one format. After approval in middle of next year, the subcommittee will talk about the components of the Avoided Cost calculation.

* We are open to a Risk Premium
* A/R 621 workshop is in July, feedback about risk premium will happen then.
* Regional “Best Practices”, should be put in next IRP.

**Question**: Andrew asked of the Avoided Cost calculation is different between WUTC & OPUC?

**Answer**: Devin answered that the cost of gas would be the major change.

* Kyle said he is encouraged to hear that OR has a more robust system than we do. The original intent of bringing up Avoided Costs was to figure formatting and presentation and where it came from, what it means and get it on 1 page. I don’t see a reason not to do this. If OR is happy then we would be hard pressed to not use it.
* Devin said Stakeholders originally found it not transparent. The purpose is to make it so!

**Question**: Carolyn asked, will it be easy to get the LDC’s together on this format?

**Answer**: Mark said we have already had meetings and it is not easy.

**Distribution System Planning**, Slide #50 (Brian Robertson)

* Engineering projects to be put into the IRP

**Question**: Brian asked Staff if anything is missing?

**Answer**: Andrew said we will let you know.

**Remaining Schedule**, Slide #51 (Brian Robertson)

* Brian went over the remining schedule for the IRP, stating that there can be a Tag #6 if stakeholders want one.
* The Final IRP is due on December 14th in Washington!

**Additional Questions**, Slide #52 (Ashton Davis)

* Ashton went over the contact information on this slide.
* Mark asked Cory, on the phone if he had any questions.
* Cory said he did not right now.

Mark closed the meeting saying thank you to everyone for their participation and attendance. Mark said that 2018’s IRP should be a step above the 2016 IRP based on your input!

Mark asked if Bruce had any comments:

Bruce said: 1) It is so gratifying to see the advanced tools the Resource Planning group is using in just 2 short years!

2) It is also gratifying to see the stakeholder engagement. This is quality. It is so

good to see involvement, asking questions and gaining understanding!

**The meeting was adjourned at 12:15 PM**.