

**From:** Koehler,Birgit G (BPA) - PG-5  
**Sent:** Thursday, June 9, 2022 4:36 PM  
**To:** James,Eve A L (BPA) - PG-5  
**Subject:** RE: DOE transmission comments on E3 study

Looks good

**From:** James,Eve A L (BPA) - PG-5 <ejames@bpa.gov>  
**Sent:** Thursday, June 9, 2022 4:35 PM  
**To:** Koehler,Birgit G (BPA) - PG-5 <bgkoehler@bpa.gov>  
**Subject:** RE: DOE transmission comments on E3 study

Changes per suggestions below: I think this works well but let me know if you don't like what I did on slide 4:

**B O N N E V I L L E P O W E R A D M I N I S T R A T I O N**

## What power benefits do the four lower Snake River dams provide?

<p><b>Reliable power to avoid blackouts</b></p> <ul style="list-style-type: none"><li>• For region and for BPA</li><li>• For regional human health and safety issues</li></ul> <p><b>Carbon-free power to fight climate change</b></p> <ul style="list-style-type: none"><li>• In the Northwest, the hydropower system provides carbon-free power</li><li>• Hydropower system enables addition of variable renewable resources, such as wind and solar, to the region</li></ul>	<ul style="list-style-type: none"><li>• 3,483 MW in maximum capacity* – historically generation <b>has peaked at 3,431 MW</b></li><li>• More than 2,000 MW of sustained peaking capabilities during cold winter weather events to <b>avoid power shortages</b></li><li>• A quarter of Bonneville's current reserves holding capability which is <b>important for integrating variable generating resources</b> such as wind and solar</li><li>• <b>Essential grid reliability services and efficiency of power transmission</b> (such as voltage support, reactive power, inertia, black start, etc...)</li></ul>
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Maintaining these carbon-free assets is an important component of shifting to a cleaner electricity grid. Loss of these assets, or reductions in their flexibility, while there are still fossil fuel generators on the grid will **increase the timeframe and costs associated** with shifting to a carbon-free electricity sector.

\*Hydro facilities traditionally operate above nameplate and closer to overload which is typically ~15% above nameplate capacity.

Deliberative, FOIA Exempt 3

## While it is *conceivable* to replace power benefits of the lower Snake River dams, it is *expensive, lengthy and complex*.

### • Expensive

- \$430 million to \$480 million per year for public power total without economy-wide decarbonization policies and with maturation of emerging technology, or up to \$2,000 million to \$3,200 million per year without maturation of emerging technology (all assuming paid for with debt financing)
- \$100 per year per household without economy-wide decarbonization policies and with maturation of emerging technology or up to \$850 per year for each public power household
- 2 million households affected
- Potential environmental justice issue – lower income households would be disproportionately affected by increased costs because a larger portion of their income goes to the electric bill.

### • Lengthy

- Practically, likely 5 to 10 years for Congressional approval additional federal agency environmental compliance and Congressional appropriations
- Roughly 5 years to replace the capacity resources
- Realistically 15 – 20 years to build transmission if needed, which includes providing compliance with the National Environmental Policy Act, siting, permits, etc., if no litigation on siting

### • Complex

- Policy requirements to reduce emissions are removing fossil fuel resources from the grid. Breaching the four lower Snake River dams significantly **adds to the deficit of resources** in the region

The emerging technology scenario, by definition, relies on technologies that do not exist yet at scale and that the timing and availability of those technologies in the future is uncertain.

Acquiring replacement resources could require **building new renewable resources at an unprecedented rate**.

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Deliberative, FOIA Exempt

**From:** Koehler, Birgit G (BPA) - PG-5 <[bgkoehler@bpa.gov](mailto:bgkoehler@bpa.gov)>

**Sent:** Thursday, June 9, 2022 4:31 PM

**To:** Shaheen, Richard L (BPA) - T-DITT-2 <[rlshaheen@bpa.gov](mailto:rlshaheen@bpa.gov)>

**Cc:** James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>

**Subject:** RE: DOE transmission comments on E3 study

Thanks Richard,

*What about this for the first point?*

*\*Essential grid reliability services and efficiency of power transmission such as voltage support, reactive power, inertia, black start, etc*

Then separately, we can reply to DOE that we agree with them that some of these services are local -- and that's exactly why we would need to replace these services near tri-cities (and other smaller load centers in the area?)

And your suggestion of not totaling the components of the timeline seems like an easy solution to both the second and third comment.

**From:** Shaheen, Richard L (BPA) - T-DITT-2 <[rlshaheen@bpa.gov](mailto:rlshaheen@bpa.gov)>

**Sent:** Thursday, June 9, 2022 4:12 PM

**To:** Koehler, Birgit G (BPA) - PG-5 <[bgkoehler@bpa.gov](mailto:bgkoehler@bpa.gov)>

**Cc:** James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>

**Subject:** RE: DOE transmission comments on E3 study

*See feedback next to your comments.....*

*If you want to talk through any of this, just let me know.*

Richard

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**From:** Koehler, Birgit G (BPA) - PG-5 <[bgkoehler@bpa.gov](mailto:bgkoehler@bpa.gov)>  
**Sent:** Wednesday, June 8, 2022 3:09 PM  
**To:** Shaheen, Richard L (BPA) - T-DITT-2 <[rlshaheen@bpa.gov](mailto:rlshaheen@bpa.gov)>  
**Cc:** James, Eve A L (BPA) - PG-5 <[eajames@bpa.gov](mailto:eajames@bpa.gov)>; Armentrout, Scott G (BPA) - E-4 <[sgarmentrout@bpa.gov](mailto:sgarmentrout@bpa.gov)>  
**Subject:** DOE transmission comments on E3 study

**DELIBERATIVE, FOIA EXEMPT**

Good afternoon Richard,

DOE today sent us their feedback on the E3 slides and BPA's "Key Takeaways" slides. We could use your help with a couple of points. Eve worked with some of your staff to assemble the deck, but I think you better understand the agency goal with CEQ to tweak the final messaging.

Thanks,  
Birgit

Here are DOE comments with my thoughts in red. Two slides from our deck attached.

**[BPA slides] Key Takeaways:**

Slide 3: Transmission reliability services – they mention black start, that's usually close held information, even working directly with the Corps they would not reveal this info. I'm thinking they are generalizing here. Also for voltage support, VARs don't travel all that far and if using the generators for VARs it further limits the MW output – can't have it both ways.

**My understanding is that T relies on the LSN precisely because it is local VAR support that they need in the region. And I don't know how much it reduces MW generation. Any thoughts, either to edit the slide or for a response to DOE?**

*Yes, VAR support needs to be physically close to load centers needing voltage support – for example, Ice Harbor is very important to voltage support, thus reliability, for tri-cities. As for reduced generation due to higher VAR support, I don't know exactly what impact is, but it likely varies a little for different generating sources. I actually questioned in my mind the wording of the Transmission bullet at the end when I saw it earlier – not only is grid reliability impacted (better than saying "transmission"), but efficiency on power transfer (i.e. when reactive power is compromised, it's harder to transmit MW – kind of like pushing up hill versus a flat surface). Bottom line: Grid stability and reliability, and efficiency of power delivery. Not sure how best to word smith.....we can discuss further.*

*What about this?*

*\*Essential grid reliability services and efficiency of power transmission such as voltage support, reactive power, inertia, black start, etc*

Instead of power delivery, I would use power transmission because for those of us not living and breathing transmission, this might cue us better to the intent.

Then separately, we can reply to DOE that we agree with them that some of these services are local, and that's exactly why we would need to replace these services near tri-cities (and other smaller load centers in the area?)

## What power benefits do the four lower Snake River dams provide?

### Reliable power to avoid blackouts

- For region and for BPA
- For regional human health and safety issues

### Carbon-free power to fight climate change

- In the Northwest, the hydropower system provides carbon-free power.
- Hydropower system enables addition of variable renewable resources, such as wind and solar, to the region

- 3,483 MW in nameplate capacity  
– historically generation **has peaked at 3,431 MW**
- More than 2,000 MW of sustained peaking capabilities during cold winter weather events to **avoid power shortages**
- A quarter of Bonneville's current reserves holding capability which is **important for integrating variable generating resources** such as wind and solar
- **Essential transmission reliability** services such as voltage support, reactive power, inertia, black start, etc...

Maintaining these carbon-free assets is an important component of shifting to a cleaner electricity grid. Loss of these assets, or reductions in their flexibility, while there are still fossil fuel generators on the grid will **increase the timeframe and costs associated** with shifting to a carbon-free electricity sector.

The BPA deck notes the challenges with transmission, driving a possible 35 year replacement timeline. But I see no transmission results in the E3 deck. In fact, since the replacement resources in all of the cases except the outlier noted above focus on H2 (with relatively little wind and solar), it seems unlikely that these cases would require much if any new transmission. On what basis should conclusions about viability be based on purported new transmission, when the study itself includes little emphasis on this—and the transmission needs are likely modest. **Part of their comment stems from the fact that this reviewer thinks that we can rely on emerging technology and not go to deep decarbonization, thus overall there would be less need for new resources and less need for transmission, both for the regional need and for LSN replacement specifically.**

*Any transmission needs are completely tied to new generation resources or requirements, especially location. Also, recall that it was brought up at our Tuesday mtg that the E3 slides did not properly represent Transmission build times, etc. There is no debating that new transmission can take 15-20 years due to permitting, etc. As for upgrading existing infrastructure – it depends....some upgrades have very similar permitting as new transmission. Not sure what is being inferred or assumed by DOE comment. If no new transmission is needed, or minimal upgrades needed, all driven by generation, than transmission is of course not part of the scenario....it all depends on the generation.*

• The BPA deck suggests a 35 year timeframe, driven in part by transmission – which as noted above, is problematic. Besides that, I would note that the E3 deck contains some information on timelines, which do not equal 35 years: so a possible discrepancy. It is also not clear why these timelines must be additive = generation + transmission. Some of these times could be happening in parallel, rather than in sequence. While noting timelines is important, the current presentation feels overly dramatic and inconsistent. **We fixed the timeframe to not include generation after sending to DOE. The slide below shows congressional time frame + TX timeframe, but that generation would be in parallel. Do you think we'd start transmission planning before congressional approval and would shorten the timeline further? Any suggested changes to the slide and/or comments back to DOE?**

*I think our planning would begin when we say it should begin – it's about feeling confident that projects are a go so where not spending money on something that's not certain – we answer to our rates payers, so can't squander \$'s. As for sequential versus parallel – of course we work in parallel.....we wouldn't wait for a generating source to be completed before we start transmission work (i.e. it's not "generation + transmission"). As for the slide, maybe just remove the "20 to 30 years total for replacement resources" bolded bullet, and just leave the rest stating the individual work stream times...?*

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• **Lengthy**

- **20 to 30 years total** for replacement resources
  - Practically, likely 5 to 10 years for Congressional approval additional federal agency environmental compliance and Congressional appropriations
  - Roughly 5 years to replace the capacity resources
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- Policy requirements to reduce emissions are removing fossil fuel resources from the grid. Breaching the four lower Snake River dams significantly **adds to the deficit of resources** in the region.

Acquiring replacement resources could require **building new renewable resources at an unprecedented rate.**