

MEMORANDUM



Date: **11/3/21**

To: **Office of Public Participation, Federal Energy Regulatory Commission**

From: **Rebecca O'Neil, Danielle Prezioso, Jeremy Twitchell, Lara Aston, Juliet Homer, Sadie Bender, Bethel Tarekegne**

Subject: **October 7 Technical Assistance Workshop Summary**

On and leading up to October 7, 2021, Pacific Northwest National Laboratory (PNNL) supported a Federal Energy Regulatory Commission (FERC) Office of Public Participation (OPP) public workshop. The purpose of the workshop was to engage interested parties in potential technical assistance associated with electricity market proceedings.

The workshop information, agenda, and recording are available online:
<https://www.pnnl.gov/events/ferc-improving-public-participation>.

The purpose of this memo is to submit all documentation into the FERC record and offer a brief summary of opportunities related to technical assistance. The following materials are included as appendices:

1. Final [agenda](#)
2. Jamboards used during the breakout rooms
3. Example technical assistance for FERC
 - [PNNL Policy Support Work with States \(website\)](#)
 - [Integrated Distribution System Planning Training for the Midwest/MISO Region \(website\)](#)
 - [FERC eLibrary Tool Overview](#)
 - [References to National Laboratories within FERC Orders](#)
4. Statistics on registrants by affiliation type and location

Summary Comments

Workshop participants supplied many types of and mechanisms for technical assistance to increase stakeholder awareness and effective participation in electricity market proceedings. PNNL staff wants to highlight certain stakeholder contributions as actionable technical assistance activities for FERC and the U.S. Department of Energy (DOE).

- The potential value in leveraging and translating existing DOE research and studies for regulatory purposes (ex: [North American Energy Resilience Model](#)).
- Guidance on the complexity of federal roles in energy decision making and explanation of which entity has which governance responsibilities, as part of explaining the basis for decision making.
- Interest in taking the workshop model employed here for electricity markets and applying it to other FERC dockets such as hydropower licensing, natural gas pipelines, and other FERC constituencies such as Tribes.
- A library of materials that demystify FERC processes, particularly the intervening process. Address the when, where, why, and how through these materials, and consider videos, one-page documents, and long-form reports in multiple languages.
- An increase in the accessibility and transparency of filings by including one or two sentences that summarize the filing in plain language up front.
- The use of existing networks to increase outreach, particularly when trying to disseminate information about significant filings to a region or community. Consider more targeted outreach to low-income communities; environmental justice organizations; Black, Indigenous, and People of Color; and communities who have not traditionally engaged with FERC.
- More interactive environments for individuals and communities to learn about FERC (e.g., FERC 101 trainings, topic-specific webinars).
- An interactive tool that maps filings to locations, so the public knows which cases at FERC may affect them.
- Community impact statements, so that communities know when and how they are affected by FERC decisions, helping them understand what type of technical assistance they might need.
- A platform for peer-to-peer knowledge exchange to help build capacity through technical assistance.
- Increased accessibility to technical staff at FERC to consult with the public through direct meeting, public forums, etc.

PNNL was pleased to offer support to OPP in creating alternative engagement opportunities for interested stakeholders. We welcome feedback from all participants in the conduct of this workshop, as well as a future opportunity to support FERC and DOE through technical assistance or other collaboration.

Appendix 1

WORKSHOP ON TECHNICAL ASSISTANCE

Understanding the Public's Technical
Assistance Needs in Electric Proceedings



OCTOBER 7 | 1:00 P.M. — 4:30 P.M. ET | ZOOM, VIRTUAL

1:00-1:15pm

WELCOME AND INTRODUCTORY REMARKS

Corey Cox

Office of Public Participation, Federal
Energy Regulatory Commission

1:15-2:15pm

PANEL

*How Technical Assistance can lead
to better public participation in
FERC proceedings*

Zeny Magos

Energy Industry Analyst, Federal
Energy Regulatory Commission

John Moore

Director, Sustainable FERC Project,
Natural Resources Defense Council

Angela Becker-Dippmann

Director, Program Development
Office, Energy & Environment
Directorate, Pacific Northwest
National Laboratory

Alejandro Moreno

Deputy Assistant Secretary for
Renewable Power, US Department
of Energy

Corey Cox

Moderator

2:15-2:20pm

BREAK

2:20-3:00pm

BREAKOUT SESSION — 1

*Participants will be invited to join a
small breakout room and discuss
the procedural influences on public
participation, capacity gaps related
to effective participation, and
mechanisms for technical assistance
to close those gaps. Facilitated by
FERC and PNNL staff.*

3:00-3:40pm

BREAKOUT SESSION — 2

*Participants will be rearranged and
organized into a new breakout
room to discuss the technical and
substantive challenges of effective
public participation, and technical
assistance mechanisms to address
these challenges. Facilitated by
FERC and PNNL staff.*

3:40-3:50pm

BREAK AND TRANSITION BACK INTO PLENARY SESSION

3:50-4:20pm

RECONVENE – GROUP DISCUSSION

4:20-4:30pm

SUMMARY, NEXT STEPS AND ACTIONS, AND CLOSING REMARKS

Register online:

[https://www.pnnl.gov/events/
ferc-improving-public-participation](https://www.pnnl.gov/events/ferc-improving-public-participation)

Appendix 2

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with Corey Cox (FERC) and Lara Aston (PNNL).

We welcome you to post a sticky note with your name to this slide to let everyone know who is in the room!

Hi! Corey here. Looking forward to our break-out sessions!

Hi, Mark Zakutansky, Appalachian Mountain Club, here.

To participate in the Jamboard:

Navigate through the boards using the arrows at at the top of your dashboard.



Each board contains a topic for discussion and related questions.

Add your response and reply to other responses by using the sticky note function or text box function located on the ribbon on the left-hand side of your screen.



TOPIC 1: INTERVENING AT THE COMMISSION

What has been your or your organization's experience with intervening at the Commission?

When we miss an intervention window and have to file out-of-time, additional flexibility would be helpful. We usually don't have a good reason to file out of time other than lack of awareness of the filing. (I know its a reg issue)

We miss a lot of filings and can't regularly read the Federal Register... so we miss intervention windows often.

What are some ways that FERC could better highlight significant filings as they come before the Commission?

low-income communities, communities of color, EJ organizations, indigenous groups, and other frontline communities that have historically been harmed by energy systems -- consider the use of social

New tools for e-mail subscriptions that are not just docket subscriptions/news, but perhaps a weekly summary of filings on a chosen topic, geographically sorted, etc.

**Topic 2:
Understanding the
Commission's
Decision-Making
Process**

Do you have a solid understanding of the Commission's decision-making process?

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

**Both financial
aid and
technical
assistance.**

**More
opportunities
to speak with
applicants to
ask questions.**

**Breakout Session 2:
Technical and
Substantive
Challenges of
Effective Public
Participation**

Topic 1: Forms of Technical Assistance

What are examples of useful forms of technical assistance, such as affidavits or types of consultant work, which you or your organization have used/relied on in Commission proceedings?

Topic 2: Analysis and Research

Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with John Miller (FERC) and Danielle Prezioso (PNNL).

We welcome you to post a sticky note with your name to this slide to let everyone know who is in the room!

Hi, this is
Danielle!

Monica
Palmeira from
the California
Public Utilities
Commission

Olivia
Nedd,
Vote Solar

Hi this is Shanna
Fricklas, from
Washington DC
with the Niskanen
Center

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TOPIC 1: INTERVENING AT THE COMMISSION

What has been your or your organization's experience with intervening at the Commission?

One time but that was in a coalition with others. Intervening is challenging to navigate, what are the different types of regulatory proceedings that exist?

What are some ways that FERC could better highlight significant filings as they come before the Commission?

Send a weekly e-blast (maybe also posted on website?) that you can sign up for that offer plain language descriptions of new filings.

Great idea!

with a person's location, so that for example anyone who lives in PJM but doesn't know it can see filings by PJM. Separately should require RTOs to flag pending tariff changes in a similar way, once they enter a

I can't speak to how FERC can determine for others what is significant. An interactive map depicting the geographic scope of filings would be very useful for our reviews.

**Topic 2:
Understanding the
Commission's
Decision-Making
Process**

Do you have a solid understanding of the Commission's decision-making process?

Biannual or even quarterly workshops, offered remote and in-person, devoted to demystifying the processes and terms used would be very helpful.

+1

Additionally, clear timelines depicting review milestones for each filing offered through an interactive portal

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

**Are there any good
state PUC examples
for docket
management/search?**

**Breakout Session 2:
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Topic 1: Forms of Technical Assistance

What are examples of useful forms of technical assistance, such as affidavits or types of consultant work, which you or your organization have used/relied on in Commission proceedings?

Peer-to-peer learning, are there organizations that are willing to volunteer their time to work one on one with new organizations or a cohort

Economics of the matter, Labor Market Information is needed How to use labor market information in your filing.

We've hired consultants to assist in digesting filings and to draft and file on our behalf on major issues. It's expensive though.

Website toolboxes by subject

Topic 2: Analysis and Research

Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

We do struggle to correctly understand the FERC regs on what specifically is topical in a filing.

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

Offering multiple and varied opportunities to engage is important to meeting communities where they are at.

These are great suggestions!

Equity - Ensure that all stakeholder groups have equal access to resources and an equal understanding of the information provided.

Host stakeholder conversations where participants can interact (and raise/share issues with each other), while having FERC present to answer technical questions impartially.

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with Julie Graf (FERC) and Bethel Tarekegne (PNNL).

We welcome you to post a sticky note with your name to this slide to let everyone know who is in the room!

Shiv
Srivastava
(He/Him)
Fenceline
Watch
Houston, TX

Andrea
Donlon, CT
River
Conservancy
(she/her)

Morgan Johnson,
NRDC/Sustainable
FERC Project,
she/her/hers

Irene Leech,
Consumer
advocate and
VT faculty
member,
she/hers

Joseph
Womble,
World
Resources
Institute
(WRI), he/him

Katie Schmidt,
American
Rivers,
she/hers

Nancy
LaPlaca,
LaPlaca and
Associates
LLC - she/hers

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What has been your or your organization's experience with intervening at the Commission?

The law needs to be changed. Or the enforcement of the window to sign up needs to be lightened. Many people are not aware they are impacted before it ends. When our state historic resources folks learned, it was too late.

We have chosen to use informal processes to make our voice heard rather than FERC processes due to significant complications coordinating among cities, FERC rules, etc.

understand what an intervenor is or why the only time to sign up is in a short window at the beginning of a process. It doesn't seem logical. They have to get farther into the process to realize the

We have intervened in a number of hydropower license proceedings, as well as license transfers.

We have submitted comments and intervened on hydropower license proceedings- new licenses, relicensing, license surrender and decommissioning, license transfers

What about a template for intervention? Just suggested wording, and [blanks] where the applicant has to fill in.

It's so difficult to simply find FERC Form 1 on the FERC website. Why not have a page ONLY for FERC Form 1? Thank you!

example, take NC (where I live). There are literally a dozen power plants named "Lee" and from the limited data in FERC Form 1, I can't distinguish one "Lee" plant from another! Here's info that would be great to have: power plant start

retired from FERC, and she tells me that the programming needed to make FERC Form 1 information available would take a couple programmers maybe a week! If we want good decisions, we have to give people relevant information. Thank

What are some ways that FERC could better highlight significant filings as they come before the Commission?

are concerned, there is so much good preliminary data that's very hard to find. I so so appreciate FERC's willingness to consider these requests. Interveners who don't have good information are not very effective! Thank

Improved media engagement

Distribute information on how to intervene as part of outreach, and extend deadlines to allow an appropriate timeline for outreach.

The FERC website could be a great place to house educational information on topics like how to intervene, the permitting process overall, what FERC does and how FERC proceedings work.

Need a "FERC for dummies" reference -- docket numbers, e-library, what it means to intervene or protest, etc.

The information needs to be provided so the public understands what something is. Not just technical language.

Link related dockets -- example: hydropower docket subscribers should know when there is a license transfer filing under Section 205.

Providing webinars or tutorials on how to file comment and explaining how to intervene with the Commission

Instead of requiring people to sign up multiple times for the same project, move those in one to the new one.

Early assistance with ISO/RTO Processes. Improving access at this stage of the decision-making process will significantly enhance the benefits that can be achieved by the OPP. Comm'n Order #719 was last visited 13 years ago.

Think about your audiences as being "outside the industry" as well as inside, and that they each need different assistance.

The only way I've discovered that certain dockets link is via Google searches!

process is for OPP to establish a program to financially support parties who wish to intervene in FERC proceedings, but lack the resources. (Sec. 319 of the FPA gives the OPP the authority to provide compensation for

**Topic 2:
Understanding the
Commission's
Decision-Making
Process**

Do you have a solid understanding of the Commission's decision-making process?

Landowners and communities need ways to know that our concerns are heard - not just ignored	NEED more info! It's hard to provide meaningful input when it's so hard to get basic data. Thank you!	Yes, OPP needs to be active and providing workshops and how-to's and ideally, walking people through the process.	We really need "citizen friendly" summaries of lengthy decisions, with bullet points of the most important points and associated page numbers
Among folks familiar with FERC and those unfamiliar, at times, it seems like there may be certain disadvantages to engaging formally in terms of impact on the final decision (versus engaging in other ways)	- Summaries for rules or topics related to transmission planning and electric markets. One model: U.S. EPA provides summaries of rules, proceeding, and significant developments in regulation.	example, a coal plant that ran at 60% capacity one year, and then 50% capacity the next year. Nameplate capacity, summer capacity, winter capacity; type of plant, i.e. CT, CC, Steam; dual-fuel, date fuel type changed, how much generation	What about short videos FERC could make so that you don't have to keep explaining the same thing?
experience, most people don't understand the process. Hearing from the company and having the company seek to be the primary source for people discourages seeking help from FERC. Companies should NOT be the	When FERC posts a comment period, it would be useful if the issuance guided commenters on the kinds of comments or the boundaries of the comments would be useful.	license transfers, there is the question about whether it's in the public interest. Most people will interpret that differently than FERC, which only looks at whether the new company has the expertise to run the	

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

several groups I'm part of that are not in DC have not had success accessing FERC personnel.

practice and procedure are written like court rules. It's navigable for attorneys, but not for non-attorneys. In fact some people/intervenors/landowners have no idea they exist. A "translated" version

For many people, the FERC rules are so undecipherable that they give up. The legal language, technical language, formality - instead of plain language - creates a real barrier

It's really important for FERC to be the primary communicator with landowners and the public - not the company.

NO. Elibrary is REALLY hard to use! When a project is proposed in a new community, people have no idea what is required. In my home community, folks feel they are hurt if they speak up. They have never been part of even a state level proceeding.

**Breakout Session 2:
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Topic 1: Forms of Technical Assistance

What are examples of useful forms of technical assistance, such as affidavits or types of consultant work, which you or your organization have used/relied on in Commission proceedings?

We've raised money in one of the groups I'm a member of to get expert help but the group in my home county has been more limited in what it can raise.

For us, it's personal contacts with community members to raise money. Some communities just don't have people with deep enough pockets to contribute in a meaningful way.

Yes, helping people engage at the RTO level would make a huge difference.

RTO is located a long physical distance away and the time and distance and travel budget requirements make it hard for people to participate. It seems you have to be in so many meetings to make a difference. We have jobs and

consultant was used to help us decipher and interpret the "Exhibit D" filing in a hydro license application -- licensee is only required to file one year's worth of revenue, and we want to know the context. New license will be in

Template-based, on-demand forms that use check boxes to get basic info as I've said now a few times :)

Example: what is "blanket 204 authorization" for a facility, and how would we know whether this of interest to a watershed org that is following a hydro license.

evaluate whether it's possible to convert an open loop pumped storage hydro to closed loop. Couldn't find a consultant that didn't have a conflict of interest, and nobody at DOE was interested because it was part of a

grants from foundations to raise money for the following consultants for hydropower proceedings: 1) lawyers, 2) energy economists, and 3) fluvial geomorphologists/engineers regarding

Also hired a fisheries biologist.

Topic 2: Analysis and Research

Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

The specific case affects information needed. It's hard to specify what we need in such a general way.

More analysis of potential impacts of decisions

Help link stakeholders with relevant white papers.

We've offered specific recommendations on what role OPP can play on the electric-side (RTO's/ISO's) here: <https://sustainableferc.org/wp-content/uploads/2021/04/OPP-Workshop-Comments-PIOs-4-23-21.pdf>

Many of the groups are formed because of the project! They don't have full time paid staff and have NO background in what is happening.

Short videos on various topics?

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

Needs to be useable by volunteers who have full time jobs but who have been affected by the project and want involvement.

Actively seeking out engagement from impacted organizations

As organizations, most have to start with learning how to organize and how to involve others and SO much more!

Frequently consult with and seek out input from stakeholders to find out what they need.

engage with FERC and will look for engagement opportunities wherever they can find them. This session is a great example of that! This was an electric workshop, but it drew folks from pipelines, hydro, etc. Keeping

Guiding principles: what does the public want? Put together a stakeholder group that includes everyone, i.e. low-income groups, advocacy orgs, etc and figure it out together!

We need to be sure that FERC really is viewing all participants as having value - not that it's goal is just to help the company get what it wants.

Break the insular nature of FERC engagement and truly reach out those who have been historically left out

NRDC has explored this broadly regarding OPP. A summary of stakeholder input/comments can be found here: https://www.mjbradley.com/sites/default/files/MJBA_NRDC_FERC_OPP_Stakeholder_Feedback_FINAL.pdf

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with **Melissa Lozano (FERC)** and **Sadie Bender (PNNL)**.

We welcome you to post a sticky note with your name to this slide to let everyone know who is in the room!

Liz Veazey, Policy & Rural Energy Director at Solar United Neighbors (she/her). I live in Omaha, NE.

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TOPIC 1: INTERVENING AT THE COMMISSION

What has been your or your organization's experience with intervening at the Commission?

does intervene really mean? Intervene on which process? (licensing, filings, comments, etc.) From the community perspective, the FERC process seems dark and convoluted, and feel like the design of ferc is designed to

What are some ways that FERC could better highlight significant filings as they come before the Commission?

the FERC have the knowledge of procedure, timeline, structure of FERC, history of FERC decision making, and all the technical assistance needed to keep up. In order to un-skew that power dynamic, FERC needs

In addition to proceedings, having easier access to annual filings that utilities make at FERC including Form 1 filings would be helpful for tracking utilities.

Topic 2: Understanding the Commission's Decision-Making Process

Do you have a solid understanding of the Commission's decision-making process?

If not - what
would help?
We discussed
fact sheets

Flow charts of
the procedure
would be
helpful

Agree with
flowcharts!

There needs to be
better ways for
stakeholder
engagement in RTO
decision-making

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

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What are examples of useful forms of technical assistance, such as affidavits or types of consultant work, which you or your organization have used/relied on in Commission proceedings?

legal support in
drafting comments,
referencing other
FERC cases, &
putting in
appropriate format.

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Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with Rachel McNamara (FERC) and Juliet Homer (PNNL).

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What has been your or your organization's experience with intervening at the Commission?

For some attorneys and technical people, participating in FERC dockets is simpler than state level. Could be better about using plain language.

For some landowners subject to imminent domain, was very confusing and hard to participate and understand. Process needs to be improved.

Some expressed difficulty in being approved to be interveners for gas project.

Feeling FERC engagement with grassroots people could be improved.

Very scary and daunting for individual land owners.

On procedure-- there are many unwritten rules that need to be written down to lessen the barriers to effective participation. e.g., you can actually file answers (with a motion for leave).

Intervention should not be required for most public comments, and it should be much easier to file comments (i.e., no e-filing or ecomment account should be needed)

Concerns about conflicts of interest for those funded by government or other private parties. Concern about AI and potential biases created by AI.

federal agencies can take public input without intervention. It just confuses things for the general public impacted with FERC projects, especially right-of-way proposals impacting the public's lands. Asking the general public to

What are some ways that FERC could better highlight significant filings as they come before the Commission?

Hard to know when the deadlines are. Not always clear.

Some might not know that they don't need to formally intervene to participate in ANOPR.

Look at engagement examples/counterpoints from other issue areas - water, environmental, transportation. They've been doing this engagement longer than energy.

Provide a simple one or two sentence description of what each filing is.

Email list serve by category so people can be notified of subjects of certain interest or locations. Tailored email lists.

OPP remove all conflicts of interest. Concern about NGOs that take money from pentagon, etc.

Need set and clear definitions. Trust is an issue.

Topic 2: Understanding the Commission's Decision-Making Process

Do you have a solid understanding of the Commission's decision-making process?

a solid understanding of the Commission's decision making process. My sense is that there are many lobbyists and conflicts of interest at this point, and that corporations definitely are a bigger part of the decision making process than

How find people who should be engage? Environmental and social scientists usually can figure out who listens to whom. Different kinds of communities and groups listen to different people.

OPP might consider talking with state public utility commissions about how they engage with ratepayers to get news out. Bill inserts can be very effective, but probably aren't a tool FERC could use without utility cooperation

Agree with the point about how FERC decides what will be decided on the papers versus what gets set for settlement judge proceedings versus litigation, and the lack of discovery.

The commission's decisions about when to decide on papers v. hearing & settlement procedures is very opaque. Inability to get discovery in most proceedings makes it very hard for intervenors to make their case.

How could OPP be proactive at the national and regional scale? Newspapers, Facebook announcements to the area, local farm bureaus. Local county govts.

White House office or community partnerships. Can lean on some of that strategizing. They are doing a lot. OPP Will need almost full time communications specialist to figure out who to reach out to and what is needed and do that outreach.

OPP can partner with others to reach out and provide technical assistance. Explain to people what the process is. Agency doesn't have to go alone. Partner.

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

one lawyer - me - and I also represent my agency in state proceedings. We simply don't have the resources to participate fully in FERC proceedings and have had to rely on the kindness and willingness of other parties to allow us to

Suggestion regionalizing more - more tailored to RTOs and PUCs and interveners. General suggestion for going forward.

Suggest a pacific coast deadline for pacific coast people, so don't have to do it three hours earlier. 5:00 ET is not equitable for people who don't live on the east coast.

Whole thing is east coast focused time, even requesting support with FERC website. Have to get requests in by 2:00, which isn't fair.

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A more clear way to know what to home in on. A clear way that grassroots organizations can get information they need.

Accountants and people with financial training to run the numbers on impacts, etc. Right now only utilities run these analyses.

Universities have helped provide analysis

OPP being able to provide analysis that can support understanding, potentially independent of FERC's formal position.

Topic 2: Analysis and Research

Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

Market monitor reports are overwhelming.

Would be great to have a dashboard that would help to organize and access free public data.

Help simplify the public comment process. It is very hard to figure out how to even submit comments. Copy what other federal entities do. Other federal entities make it easier.

provide TA on 205 filings because such short timeline. Rulemaking filings would lend themselves to that. In contested proceedings, will be hard for OPP to really provide non-biased TA. Intervenor funding may be more

Need to be realistic about what TA OPP can reasonably provide, given a contested case format.

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

How would members of the public even know that the office of public participation even exists? Need to help them know.

Collaborate with other federal agencies to set up links from natural websites to the FERC OPP website. eg., EPA, Interior, etc.

sure links to it are easy to find for all tech assistance that people can request or obtain, with all the contact info they need to get there all in one place. I've been seeing this as a capacity building need in multiple

Help give people the path forward of what they need to do.

It would be great to have an ongoing platform for providing input to OPP and asking questions about FERC participation, sharing positive and negative experiences , suggesting topics for fact sheets.

That platform could eventually be expanded to RTO governance experiences and questions.

might be as basic as "why do I care about FERC?" to technicalities of proceedings), how to reach them directly and by leveraging other partners and networks, how to develop and prioritize TA provision in sustainable ways. how

How do you determine if a FERC proceeding is salient to you?

Experienced people with time have ways to look for and identify what is important

Generally, I find out from other consumer advocates or public interest organizations.

Breakout Session 1: Procedural Issues for Participating at FERC

You are in a breakout room with Robin Griffin (FERC) and Jeremy Twitchell (PNNL).

We welcome you to post a sticky note with your name to this slide to let everyone know who is in the room!

To participate in the Jamboard:

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Each board contains a topic for discussion and related questions.

Add your response and reply to other responses by using the sticky note function or text box function located on the ribbon on the left-hand side of your screen.



TOPIC 1: INTERVENING AT THE COMMISSION

What has been your or your organization's experience with intervening at the Commission?

Amy Mignella (Hopi Tribe) - 1st hour wasn't helpful as a workshop; didn't have opportunity to interject. 4 Corners in not just tx constrained, it's tx denied.

Amy (cont) - need more time to respond to questions. Felt like speakers commented on behalf of clients without any authority to do so. This is an important undertaking.

Disagree with speaker premise that some things that FERC does don't lend themselves to TA. We should have an opportunity to respond to that.

Karen (Elcon): When we have general ?s about how to engage in a specific matter, should be contact OPP or the specific FERC office handling that issue? Is OPP a 1st stop for everyone?

Anjali (DC OPC): Hard for entities not familiar with FERC to intervene. Demistifying the process in general would be helpful -- when/how to intervene

Anjali: Would be helpful to better understand cases -- what has been filed and what's important. More info about specific cases and affected regions would help

Communities could differ; would be helpful if FERC could help them identify who is representing their issues before FERC - consumer advocates, etc.

Azania (DC Communities): Communities often not aware of how issues impact them. I recommend that FERC have community impact statements

John Moore's comments about mapping this were insightful. Communities experience lack of access - if you can spell that out, it facilitates engagement

Communities are not monolithic. If you do impact statements, communities can decide whether/how to engage as they see fit

Kelly Yee (DOE/EERE) - Accessibility of info is important and awareness

What are some ways that FERC could better highlight significant filings as they come before the Commission?

Amy: How is significant defined when every community is different? Example: We're in coal transition, and wondering what comes next

There are a lot of pieces to that. That question needs to inform FERC's orientation. FERC needs to better canvass the landscape of interests

Karen: Even FERC experts may not see the broader implications of a particular case or when FERC will use a single case to set broader policy

If OPP has a website like landmark decisions site to identify cases that could have broader implications (rates/siting/planning/etc.) Need a 1-stop place like that

Azania: Mapping regional issues - you could have a tool where someone puts in their zip codes and sees relevant cases

Different investments/buildouts have different impacts on communities with different vulnerabilities

Anjali: FERC's website is still difficult to navigate. eLibrary is specifically challenging (+1)

Gaye (gopower): 1. People/orgs not aware soon enough of projects. 2. Folks usually only know about a project once its in their neighborhood.

3. Once aware, they lack time/financial resources to learn enough about the subject to even ask appropriate ?s. 4. This includes municipalities, which may not have

resources to participate in federal proceedings. 5. Idea: Require project developers to create an escrow account to fund municipal intervention in proceedings

Topic 2: Understanding the Commission's Decision-Making Process

Do you have a solid understanding of the Commission's decision-making process?

Karen: When do filings go into effect by operation of law? There's no clear-cut process for some filings. Helping end-users understand when they can comment would help

Potentially multiple bites of the apple in rehearings, etc.

Amy: I hear a presumption of legal representation. FERC needs to step back many levels from that assumption. This is supposed to be about public participation

The goal can't only be facilitating technical professional participation. We need to bridge the grand canyon expanse of needing to meet a competency threshold to participate

FERC OPP staff need to keep redirecting to that bigger principle of public participation

Azania: FERC has a responsibility to inform citizens so that they can exercise their right to participate. Need to tell people what you're going to tell them, then tell them,

then tell them what you told them. Engagement isn't a one-time hit. We've had some good suggestions today; need to follow along that continuum

Topic 3: Effective Pleadings

Do you have the resources to develop effective pleadings in proceedings? What are you lacking?

**Breakout Session 2:
Technical and
Substantive
Challenges of
Effective Public
Participation**

Topic 1: Forms of Technical Assistance

What are examples of useful forms of technical assistance, such as affidavits or types of consultant work, which you or your organization have used/relied on in Commission proceedings?

Topic 2: Analysis and Research

Is there specific technical information, expert analysis, etc, that your organization believes would allow it to better engage at the Commission?

Amy: Hopi Tribe submitted comments on this. There needs to be higher-level orientation to the proposed action to help entities determine their interests

From there, layering of technical information can go into greater & greater detail.

We need an adjustment - we need community-level engagement. Not just state agencies. The need is glaring. If you want to participate, you need some idea of what is happening

We need a substantial re-orientation to public outreach. We notices far enough in advance to facilitate community-level organization

Listserves have limitations -- depend on the right person opening the email. Direct engagement remains important to avoid communication gaps.

Anjali: Plain English description of issues and impacts would help others determine if they need tech expertise and what kind they need.

Training on some of the more technical issues would be really helpful, especially market filings. Someone who can explain it & have a convo would be helpful

Transmission planning done at regional level. Comment was made about getting involved in transmission planning before it's baked in

Tougher to address decisions that have already been made. How to get involved in processes earlier and how to engage would be helpful.

Everything that FERC does impacts consumers, and there's no one way to engage. That's one thing that OPP will need to look at -- how

Azania: Filings have complex analysis; complementary reports that explain the issue for community members can help them engage.

People need complementary literature that walks them through the steps, gives them the pros and cons. Need to have input on where tax dollars are spent

Interactivity is important. Utility inserts that provide clear explanations are an example of a good strategy. Communication is critical and it requires an integrated approach

Are there already tools & engagement scenarios? Other processes map out how you engage the community before decisions are made -- let them know what is happening now

Agencies (FERC/DOE/labs) should have

Everything is not going to fit every community. What works for one may not work for another

Topic 3: Access to Technical Assistance

What should OPP's "guiding principles" be in designing technical assistance programs?

Appendix 3



FERC eLibrary Tool – New Techniques for Knowledge Extraction

FERC's eLibrary (<https://elibrary.ferc.gov/eLibrary/search>) is an on-line records information system that contains documents and information for the four industries FERC regulates: electric, hydropower, natural gas, and oil. The eLibrary contains millions of individual documents, including:

- electronic versions of documents issued by FERC from 1989-present;
- documents received and issued by FERC:
 - a description/index of documents from 1981-present;
 - microfilm and aperture cards of documents for 1981-1995;
 - scanned images of paper documents from 1995-present; and
 - native files electronically submitted from November 2000-present.

The eLibrary is a treasure trove of information for all four industries and is especially useful for the hydropower community because it provides historic and current information about environmental studies and license conditions required for individual hydropower projects. However, eLibrary users, including FERC staff, express frustration with the difficulty of finding and accessing relevant documents and information within eLibrary. Since the early 1990s, there has been a consistent call from users in the hydropower community for FERC to improve the process of finding and accessing documents and information in eLibrary. FERC updated its eLibrary interface in 2020, but the update did not address many of the problems users experience when searching for documents in the system.

With funding from DOE's Water Power Technologies Office, PNNL is developing a software solution to improve hydropower users' ability to locate and access documents and information contained within the existing on-line eLibrary. To begin developing the tool, the PNNL team has acquired a substantial collection of hydropower documents from the eLibrary system. The team explored various approaches, both manual and automated, to retrieve these documents. The team then leveraged various text analytic technologies to extract additional concepts and metadata from the documents that can be used to more effectively model and organize the information for search and retrieval within the existing eLibrary. Using the results of this analysis, the team has developed a pilot application based on informed design to demonstrate the improved visual analytic search and retrieval capabilities. The pilot offers a visual interface for users to interactively navigate and explore the information space to improve the user's experience in identifying and accessing relevant documents of interest. When completed, the publicly-available tool will make it easier for users to find and access documents and information within FERC's existing eLibrary system without altering the system itself.

For more on DOE's Water Power Technologies Office Hydropower Program, please see:

<https://www.energy.gov/eere/water/hydropower-program>

For more information about the project, please contact Bo Saulsbury, james.saulsbury@pnnl.gov

References to National Laboratories within Federal Energy Regulatory Commission Orders

Earlier this year, the Federal Energy Regulatory Commission (FERC) created the Office of Public Participation (Office) to facilitate increased public engagement in its proceedings. The Pacific Northwest National Laboratory (PNNL) has partnered with staff assigned to the Office to identify specific barriers to public participation and possible ways in which the Department of Energy and the national laboratories can support the Office in reducing those barriers.

The national laboratories have developed extensive networks to provide technical assistance to state regulators, state energy policy makers, regional market operators and other regional organizations. However, these programs have historically had only limited engagement in FERC proceedings, primarily in the form of expert testimony given during technical conferences.

Some of the barriers to participation in FERC processes are procedural in nature, related to the challenges associated with navigating FERC's complex structure and practices. Others are technical in nature, related to the analytical and informational challenges that may prevent some stakeholders from engaging in FERC processes or limit their ability to do so effectively.

This memo presents a summary of instances in which FERC orders have cited work done by the national laboratories. While the publications cited were not exclusively prepared for FERC, their use by stakeholders to support arguments before FERC and FERC's inclusion of them in its final orders are indicative of the value placed on national laboratory sources. These examples also indicate the types of technical assistance that may be of use to FERC and its expanding group of stakeholders.

The table below includes a selection of FERC orders that reference work done by a national laboratory within their documentation. The purpose of this investigation was to obtain an understanding of whether the national laboratories or the Department of Energy conducts work that directly translates into regulatory actions at the federal level. References found within the table include citations both by FERC directly and by commenters in response to FERC proposals. The references are almost all made to laboratory reports or articles, excluding one reference in which a laboratory was noted as a commenter on a proposal and one in which a laboratory employee was noted as a participant in a technical workshop.

The process to retrieve these results involved filtering items from FERC's eLibrary. The criteria included only public orders/opinions made by the Commission that contain the phrase "national laboratory." This search revealed approximately 150 results. A smaller selection, therefore, was made to include approximately the last ten years of items, plus a small number of others that were released earlier and considered important to include.

The table contains the following items, in order:

- Date
- Docket number
- Order no. (if applicable)
- Accession number
- Order title
- Entity (Laboratory) being referenced
- Context for the reference

Interesting findings include the following:

- A large number of the references to labs were not made directly by FERC but by commenters in the industry that were using lab reports to support their arguments either against or in favor of FERC's proposals.
- There are some instances in which the same reference is used by both a commenter that opposes the FERC proposal and by FERC to counter the statement made by the commenter.
- There are three types of laboratory work products that FERC has cited in its orders:
 - Hydropower modeling, which is frequently cited in dam relicensing proceedings
 - Grid modeling, which has been cited in rulemakings and tariff proceedings, particularly those relating to the market participation and compensation of emerging technologies
 - Reference materials, such as resource cost studies and policy summaries

Date	Docket No.	Order No.	Accession No.	Order Title	Entity Referenced	Context
7/15/2021	RM21-17-000		20210715-3078	Advanced Notice of Proposed Rulemaking: Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generation Interconnection	Lawrence Berkeley National Laboratory	A decade after instituting regional transmission planning requirements in Order 1000, FERC determined that it was time to revisit the transmission planning process and determine if additional reforms would be necessary to ensure that transmission plans reflect and accommodate the transformation taking place in the electric sector. FERC's advanced notice of proposed rulemaking cited two LBNL reports: "Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection as of the End of 2020" and "Expert Elicitation Survey Predicts 37% to 49% Declines in Wind Energy Costs by 2050."
7/15/2021	RM96-1-042	587-Z	20210715-3028	Standards for Business Practices of Interstate Natural Gas Pipelines	Sandia National Laboratories	This order adopts the most recently developed business practice standards adopted by the Wholesale Gas Quadrant of the North American Energy Standards Board (NAESB) and incorporates them by reference into FERC regulations. Recommendations from an SNL report were cited as one of the reasons for updating the NAESB standards.

9/17/2020	RM18-9-000	2222	20200917-3162	Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organization and Independent System Operators	Pacific Northwest National Laboratory, Lawrence Berkeley National Laboratory	Order 2222 is a landmark order requiring regional wholesale market operators to enable the participation of aggregated, distributed energy resources in markets. The order cited the comments offered by Jeffrey Taft of PNNL during a workshop regarding communications frameworks for distributed energy resources. It also cited a report from LBNL, "Distribution Systems in a High DER Future: Planning, Market Design, Operation and Oversight," regarding the potential for distribution system operators (DSOs).
12/3/2018	EL18-182-000 ; ER18-2364-000		20181203-3039	Order Accepting Compliance Filing & Requiring Informational Filings	Lawrence Berkeley National Laboratory	In August 2018, ISO-NE submitted proposed revisions to its Transmission, Markets and Services Tariff. ISO-NE stated that the proposed revisions establish a "fuel security study methodology, a short-term cost-of-service mechanism to ensure fuel security, and related provisions governing the allocation of costs for such out-of-market compensation." This order accepting these revisions includes comments and challenges, one of which came from NEPOOL which argued against how state renewable portfolio standard (RPS) requirements were modeled in the Fuel Security Study. They cited an LBNL report when stating that "achievement of [RPS] requirements has been maintained even as states have increased their renewable requirements"

2/15/2018	RM16-6-000	Order No. 842	20180215-3099	Order No. 842 Final Rule re the Essential Reliability Services and the Evolving Bulk-Power System -- Primary Frequency Response under RM16-6.	Lawrence Berkeley National Laboratory	This order is a revision of FERC's regulations to require new generating facilities to also install, maintain, and operate equipment that is capable of providing primary frequency response as a condition of interconnection. A 2010 LBNL report was cited by FERC in a footnote as an additional source in support of the statement that "inertia, primary frequency response, and secondary frequency response interact to mitigate frequency deviations."
1/8/2018	AD18-7-000; RM18-1-000		20180108-3061	Order terminating rulemaking proceeding, initiating new proceedings, & establishing additional procedures re Grid Reliability & Resilience Pricing under RM18-1 et al.	Argonne National Laboratory; Lawrence Berkeley National Laboratory	This order terminates a prior FERC proceeding that was initiated to address the Proposed Rule on Grid Reliability and Resilience Pricing submitted by the Secretary of Energy. In this order, FERC directs each RTO and ISO to submit information on certain resilience issues and concerns for their evaluation. Argonne National Laboratory (ANL) is cited in a paragraph in which FERC states that those that submitted comments on the initial FERC proceeding provided a wide variety of definitions for grid resilience, including one from ANL. LBNL, on the other hand, was included as a reference on the following statement by Commissioner Richard Glick concurring with FERC's decision: "even when fully operational, many coal and nuclear generators are incapable of providing all the NERC-defined essential reliability services."
1/19/2017	RM15-11-001	Order No. 830	20170119-3015	Order Deny Rehearing re Reliability Standard for Transmission System Planned Performance for	Los Alamos National Laboratory; Idaho National Laboratory; Oak Ridge	This order approves a reliability standard which establishes requirements for some entities to assess the impact of geomagnetic disturbance events (GMDs) on their transmission systems. A 2015 Los Alamos paper was cited within a summary of industry commenters in opposition to the changed standard. Specifically, the reference was related to the topic of "reference peak geoelectric field amplitude

				Geomagnetic Disturbance Events under RM15-11.	National Laboratory	values" and was used to argue against the commenters' statements that the currently established methodology is most accurate. A 2010 ORNL report was cited on the same topic by a commenter who used it as an example that there is research-based misunderstanding of historic GMDs to suggest that FERC require a larger number of events for simulation given the complexity of the topic. Lastly, Idaho National Lab was referenced with regard to the modification of thermal impact assessments by a commenter who argued an INL study provided information to counteract another commenter statement that "the 75 A/phase qualifying threshold for thermal impact assessments is not technically justified."
6/25/2015	P-12451-030		20150625-3067	Order on Fish Protection Effectiveness Report pursuant to Article 403 re SAF Hydroelectric, LLC under P-12451.	Oak Ridge National Laboratory	This order relates to a licensee (SAD Hydroelectric, LLC) and their Fish Protection Effectiveness Report for the Lower Saint Anthony Falls Project. ORNL is cited within the FERC report as a reference for the statement that "Spillway passage has the potential to injure or kill fish due to high velocities, shear on the spillway surface, pressure changes, and collisions with energy dissipation blocks, comparable to turbine passage" when commenting that the licensee appears to be confused by the difference between bypass structures and the Obermeyer gate structure.
5/14/2015	RM15-11-000		20150514-3102	Notice of proposed rulemaking re Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance	Oak Ridge National Laboratory	This proposed Reliability Standard TPL-007-1 establishes requirements for certain entities to assess the vulnerability of their transmission systems to geomagnetic disturbance events (GMDs). A 2012 ORNL report on the effects of GMD events on the bulk power system is stated as a reference by FERC for the following statement "[Geomagnetic disturbances] could cause widespread blackouts and cause damage to equipment that could result in sustained system outages."

				Events under RM15-11.		
10/16/2014	RM14-1-001	Order No. 797-A	20141016-3003	Order No 797-A - Order denying rehearing re Reliability Standard for Geomagnetic Disturbance Operations under RM14-1	Oak Ridge National Laboratory	Resilient Societies filed a request for rehearing of Order No. 797 which approved Reliability Standard EOP-010-1 (Geomagnetic Disturbance Operations) submitted by the NERC, this order denies the request. ORNL is first used as a reference by Resilient Societies to state that "the 200 kV threshold in the applicability criteria is arbitrary" given that the 2010 ORNL report makes a case that "networks operating below 200 kV were in fact impacted by a moderate solar storm." Foundation Societies also referenced an alternative FERC order citing an ORNL report to support its position regarding the "alleged unreliability of two-way communications during a GMD event."
6/19/2014	RM14-1-000	Order No. 797	20140619-3006	Final Rule - Order No. 797 re Reliability Standard for Geomagnetic Disturbance Operations under RM14-1	Oak Ridge National Laboratory; Idaho National Laboratory	This order is FERC's approval of Reliability Standard EOP-010-1 regarding Geomagnetic Disturbance Operations. A commenter on the order, SmartSense, cited an ORNL study on GMD as well as an article from INL, in which sub-200 kV transformers were tested, to support their assertion that "the 200 kV threshold for transmission operators is inconsistent with the Commission-approved definition of bulk electric system," which is usually 100 kV or higher. The same ORNL report and INL article were referenced later, however, they were brought up by FERC to dispute claims made by commenters regarding the applicability threshold.

5/16/2013	RM12-22-000	Order No. 797	20130516-3090	Final Rule re the Reliability Standards for Geomagnetic Disturbances under RM12-22.	Oak Ridge National Laboratory; Idaho National Laboratory	The references within are the same as the item above (RM14-1-000).
3/22/2013	EL05-121-008		20130322-3049	Order on rehearing re PJM Interconnection, L.L.C under EL05-121.	Lawrence Berkeley National Laboratory	This order refers to another order in response to a remand by the United States Court of Appeals for the Seventh Circuit regarding cost allocation for new transmission facilities that operate at or above 500 kV. The reference to LBNL was made by Dayton, who was one of the entities making a rehearing request. The context for the reference was in a statement in which they claim that the Order on Remand's calculation of benefits to PJM, which was based on an LBNL's report on the average cost of interruptions, was incorrectly used. The LBNL report, Dayton states, is intended to be used for interruption benefits for customers, not an RTO.
03/21/2013	RM12-4-000	Order No. 777	20130321-3073	Order No 777 - Final Rule re revisions to reliability standard for Transmission Vegetation Management under RM12-4.	Pacific Northwest National Laboratory (PNNL)	This order is a FERC approval of Reliability Standard FAC-003-2 which "expands the applicability of the standard to include overhead transmission lines that are operated below 200 kV, if they are either an element of an Interconnection Reliability Operating Limit or an element of a Major WECC Transfer Path." PNNL was referenced due to the fact that they were retained by FERC to undertake an analysis to confirm that NERC's usage of the Gallet Equation in their petition to FERC for the now-approved reliability standard was technically justified. A final report by PNNL was included as part of the FERC docket.

6/22/2012	RM10-11-000	Order No. 764	20120622-3031	Order No. 764: Final Rule re the Integration of Variable Energy Resources under RM10-11. Commissioner LaFleur is dissenting in part with a separate statement attached.	Argonne National Laboratory; Lawrence Berkeley National Laboratory	This order is a final ruling by FERC to amend the pro forma Open Access Transmission Tariff to "remove unduly discriminatory practices and to ensure just and reasonable rates for Commission-jurisdictional services." ANL was referenced as one of the commenters in support of potential reforms and was noted as being among the commenting group that believes intra-hour scheduling allows for a more accurate prediction of the variable generation and that transmission resources should be scheduled on 15-minute intervals. ANL's comments and arguments are routinely noted throughout the document. An LBNL report prepared for FERC was later referenced by a commenter that suggested that FERC should unbundle regulation and frequency response into separate ancillary service schedules.
10/21/2011	ER10-1791-001; ER10-1791-002		20111021-3004	Order Denying In Part and Granting in Part Rehearing, Conditionally Accepting Compliance Filing, and Directing Further Compliance Filings	Lawrence Berkeley National Laboratory	FERC's approval of the Midcontinent Independent System Operator (MISO)'s proposed process for studying Multi-Value Projects during the transmission planning process was challenged by several utilities, who argued that a utility-by-utility analysis of the project should be required before costs can be allocated to any utility. To refute that argument, FERC cited multiple reports that discussed the regional value of improved reliability, including LBNL's report, "Scoping Study on Trends in the Economic Value of Electricity Reliability to the U.S. Economy."

2/17/2011	RM11-7-000; AD10-11-000			Notice of Proposed Rulemaking: Frequency Regulation Compensation in Wholesale Power Markets	Pacific Northwest National Laboratory	The emergence of new technologies capable of responding to grid signals more rapidly than traditional sources of frequency response prompted FERC to initiate a proceeding to determine if new rules would be necessary to enable fair and accurate compensation of resources capable of fast response. The notice of proposed rulemaking noted that multiple participants in a previous technical conference on the subject cited a PNNL report, "Assessing the Value of Regulation Resources Based on their Time Response Characteristics."
7/16/2009	PL09-4-000		20090716-3137	Policy Statement re Smart Grid Policy under PL09-4.	Lawrence Berkeley National Laboratory	In response to the need for action on challenges to the bulk power system, within this docket FERC provides "additional guidance on standards to help to realize a smart grid." In the Proposed Policy Statement, FERC identified several challenges to the reliable operation of the bulk power system including "issues associated with changes to the nation's generation mix." LBNL was referenced in a footnote to that with regard to a 2009 commissioning to help assess the potential for renewable integration of wind and other resources.

7/20/2006	RM06-4-000	Order 679	20060720-3062	Final Rule - Order 679 re Promoting Transmission Investment through Pricing Reform under RM06-4	Oak Ridge National Laboratory; Lawrence Berkeley National Laboratory	This order pertains to amending regulations to establish incentive-based rate treatments in interstate commerce by public utilities for the purpose of ensuring reliability and reducing transmission congestion. A report by ORNL is referenced in the document in support of the statement that the "decline in transmission investment in real dollars has occurred while the electric load using the nation's grid has more than doubled." An LBNL report was cited by a commenter (International Transmission) in supporting the need for new transmission investment when stating that the cost of power interruptions can "range from between \$29 billion and \$135 billion annually."
9/27/1989	P-2971-	Order 48 FERC 61,363	19891003-0433	Order denying applications for license of Allegheny Elec Coop for Proj #2971,et al.	Oak Ridge National Laboratory	Referencing why no additional continuous data collection of dissolved oxygen (DO) was required at the project, and overruling natural resource agency recommendations, the commission wrote: "Our conclusion in this regard is supported by the fact that the DO-related analysis performed for the FEIS was the most complete and scientifically advanced analysis of cumulative DO impacts ever performed. Furthermore, the work was performed by Oak Ridge National Laboratory personnel, recognized experts in the field."

Appendix 4

Registration Statistics

