

# ACCESS

T B L M A R K E T I N G B I - M O N T H L Y

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*Celilo converter station at the north end of the 3,100 mw DC Intertie celebrated 30 years of technology and innovation.*

## BPA celebrates 30 years of DC Intertie

A 30-year celebration of innovation and technological achievement at the Celilo Converter Station drew 200 workers and engineers – some who have been involved with the project since its inception.

Celilo, which is near The Dalles, Ore., ties down the northern end of an 846-mile direct current line that ends at the Sylmar Converter Station in Los Angeles. Both stations convert alternating current into DC and send it on its way with nearly no line losses to the other station where it is converted back into AC. At one time, the DC Intertie was considered the largest of its kind in the Western hemisphere and continues to draw the interest of people from all over the world.

Today Celilo sends south up to 3,100 MW of direct current energy. That is more than enough to serve the 2,300 MW needed by the City of Los Angeles.

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## BPA celebrates 30 years of DC Intertie

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But, when it was built in 1970 at a cost of \$65 million, its capacity was half that amount.

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### TECHNOLOGY AND INNOVATION ACCOUNT FOR THE MORE THAN DOUBLING OF CELILO'S CAPACITY OVER THE THIRTY YEARS OF ITS EXISTENCE.

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Technology and innovation account for the more than doubling of Celilo's capacity over the thirty years of its existence, according to Judi Johansen, Administrator at the Bonneville Power Administration.

"From the oldest mercury arc converters installed in 1969 to the latest Siemens light-triggered thyristors installed in 1997, Celilo and the DC Intertie have been at the forefront of direct current transmission innovation," Johansen said to the 67 people at an Aug. 25 dinner celebrating Celilo's anniversary.

After the original mercury arc converters were installed, technology improvements increased the facility's capacity to 1,600 MW by 1979. Then the Voltage Upgrade Project increased

its rating to 2,000 MW in 1985 by adding 100-kV thyristor groups in series with the existing mercury-arc groups. In 1989, thyristor converters 1 and 2 were constructed, and, ultimately, the capacity increased to its present rating of 3,100 MW.

"You have taken the dreams of the past and have made them reality," she said. "You are the people we are really celebrating here tonight."

Mark Maher, Transmission Business Line's executive vice president, took time at the dinner to single out another speaker – Chuck Luce, the BPA administrator who championed the development of Celilo long before it was built.

"I have to take a moment to recognize someone who many consider a giant in the utility industry and the man whose ideas led to creation of converter station," Maher said. "That is Chuck Luce."

Johansen said it was not easy getting all the local support necessary to build the line.

"Celilo and the Intertie it supports were not popular in some quarters when they were proposed," Johansen said. "What won the day was engineering and new developments in DC technology. But more than that, it was

the willingness to embrace the needs of society in both the Northwest and Southwest."

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**"IT'S NOT POSSIBLE TO TALK ABOUT THE TECHNOLOGY WITHOUT ALSO TALKING ABOUT THE PEOPLE WHO HAVE PUT THEIR MINDS TO WORK TO MAKE CELILO THE ENGINEERING MARVEL IT WAS IN 1970 AND STILL IS TODAY."**

**JUDI JOHANSEN  
BPA ADMINISTRATOR**

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Some of the societal needs had included the sale of surplus Northwest power, which would otherwise have been wasted, to California. The Intertie has helped both the Southwest and the Northwest make some seasonal power exchanges. This also helped air quality by reducing the amount of fossil fuel burned to generate electricity.

Johansen said the Northwest must revisit use of the line and whether that use justifies the possibility of spending millions more to update equipment. A public process to study the future of the DC Intertie is underway.

## Discussions set for improvements to grid north of Seattle

The results of two efforts to bolster the transmission system north of Puget Sound will be presented Oct. 25 and 26 in Vancouver, B.C. The session will be hosted by BC Hydro. On the agenda: the Westside Northern Intertie Long Range Study and a draft of the Puget Sound Constraints Management Project.

"We've already resolved many short-range issues in past discussions," said Cliff Perigo, senior TBL account executive. "Now we plan to address how to ensure we can meet load service in the Seattle and Bellingham areas and, at the same time, strengthen the electrical system for flows to and from British Columbia."

Perigo said a meeting in fall 1999 was aimed at developing and agreeing to a series of "short-term fixes" to problems on the electrical system from northwest Washington and Canada "to help us get through the winter of 1999-2000 without dropping load or curtailing Canadian transfers." Transmission merchants, marketers, independent power producers and several others interested in the northern Puget Sound system attended that meeting.

"The discussions we have at the October meeting could have an impact on any one of these groups," Perigo said.

The meeting will be in downtown Vancouver, B.C. The Oct. 25 meeting, 10 a.m. to 5 p.m., will look at system planning studies. The cut plane and other topics will be on the agenda Oct. 26, 8 a.m. to noon. For more information about the conference, call Tobey Garcia, TBL, at (360) 418-2071, or Pam Carter, BC Hydro, at (604) 473-5730.

# Montana fires interrupt service, put strain on system

Winds fanned flames on an uphill slope and pushed the forest fire under the Broadview-Garrison double circuit 500 kilovolt transmission lines, causing a blaze so hot it melted the aluminum conductor off its steel-reinforced core and shut the line down for more than half a day in early August.

The incident also caused Montana Power's 1,000 megawatt Colstrip plant to go off line until the transmission line was restored and it put a strain on west coast transmission system reliability.

The Boulder Pass fire, between

Butte and Helena, Mont., was one of innumerable fires in Montana

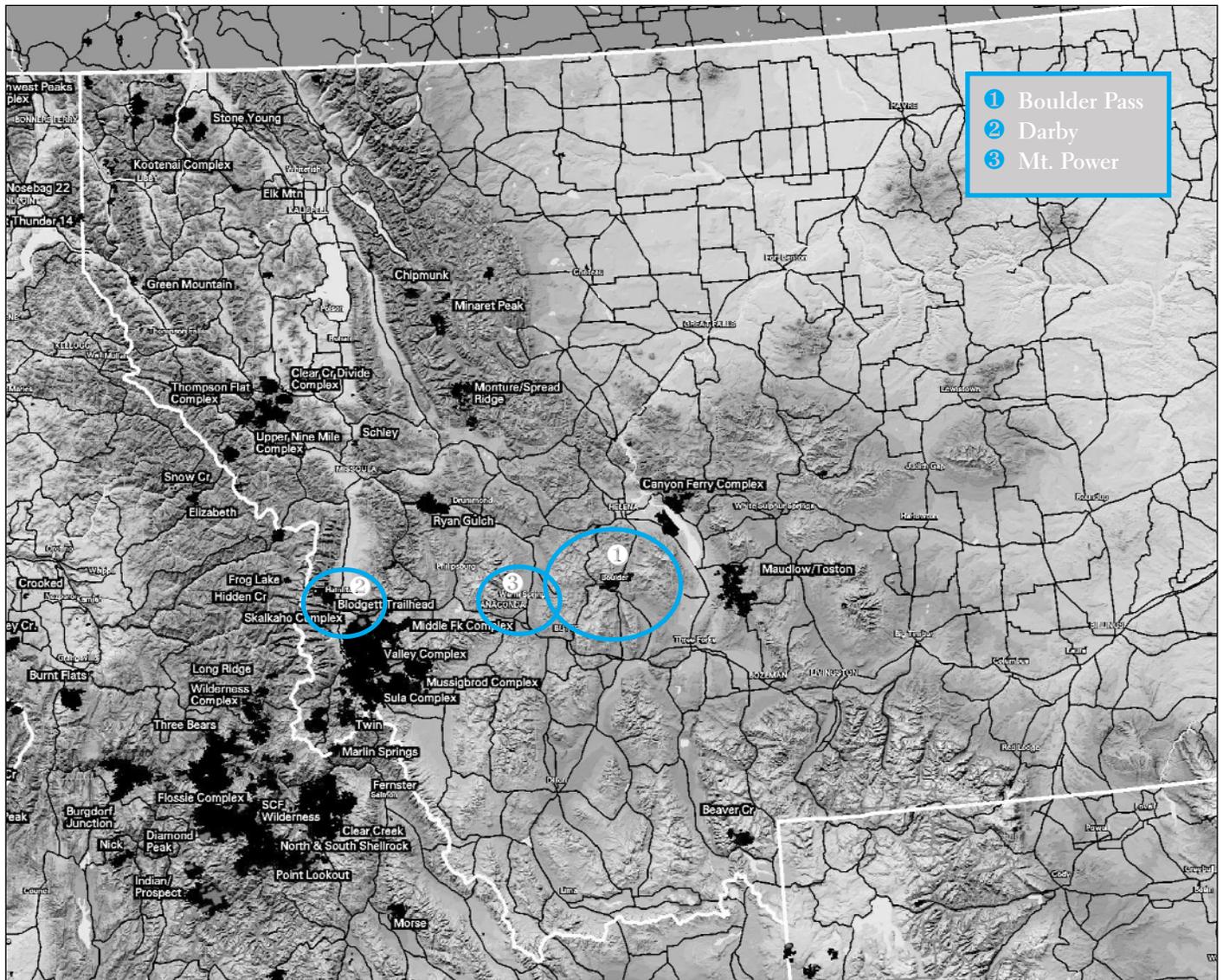
**THE BLAZE WAS SO HOT IT MELTED THE ALUMINUM CONDUCTOR OFF ITS STEEL-REINFORCED CORE AND SHUT THE LINE DOWN FOR MORE THAN HALF A DAY IN EARLY AUGUST.**

this summer that burned more than three-quarters of a million acres of forest land. And, it was one of one of

several incidents during Montana's dry and dangerous fire season that affected transmission lines and the west coast power system.

Three of those fires caused enough damage to transmission lines that repairs were needed, power was rerouted, a strain was put on the north to south lines between the Northwest and the California, and, at one point, even a large portable generator was added to serve a small Montana town.

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The Boulder pass fire (circled above) that affected the Broadview-Garrison double circuit 500 kV line was only one of numerous fires this summer in Montana and Idaho. Also circled are the town of Darby and Montana Power's section of 500 KV line affected by fire.

## Montana fires

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“The fire moved up the hillside and when it did, it traveled back and forth under the line,” said Ken Hemmelman, Transmission Business Line Spokane Region manager, describing how the Boulder Pass fire generated enough heat to put the Broadview-Garrison line out of service. “Even though the trees were 40 feet below the conductor on that slope, the fire was like a blow torch.”

He said the lower aluminum conductor melted off the steel reinforcement cable. The cable held, he said, but the incident caused the line to go

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**EVEN THOUGH THE TREES WERE 40 FEET BELOW THE CONDUCTOR ON THAT SLOPE, THE FIRE WAS LIKE A BLOW TORCH.**

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off service for about 12 to 14 hours during the fire and remained out of service for several hours while crews repaired the damage.

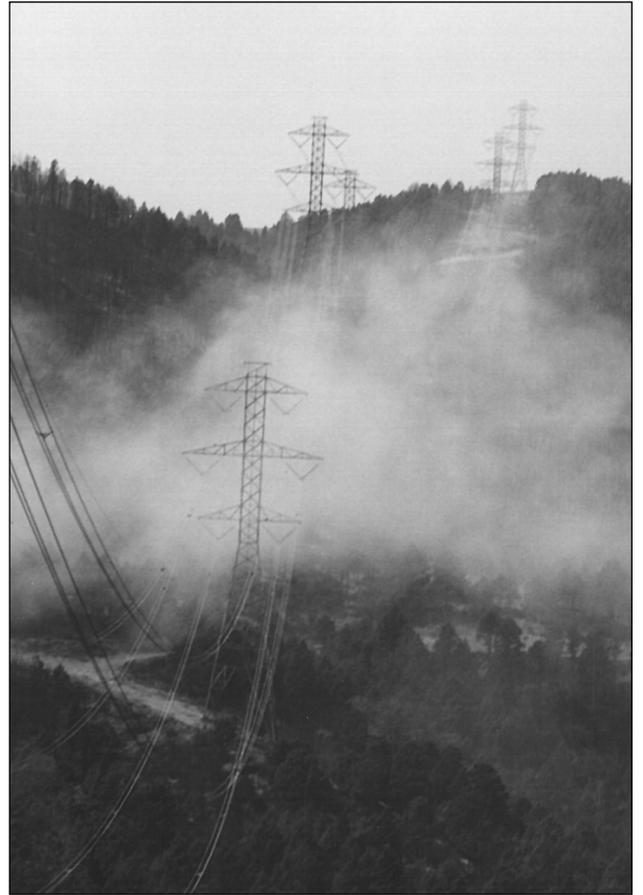
In addition, Montana Power had to take another section of the Broadview-Garrison 500 KV line out of service

east of the Boulder Pass fire and near the Broadview Substation after a fire moved through and caused damage to insulators. The line was removed from service during the fire and also for about six hours after the fire while Montana Power crews replaced damaged insulators.

Hemmelman said another fire south of Hamilton, Montana isolated the small town of Darby, which Bonneville serves.

“The fire burned lines into and out of the town,” Hemmelman said. “When we found out about that, we loaned them our 100 kilowatt gasoline generator, which they ran an estimated 70 to 75 hours while restoring service to the town.”

Earlier in the month, California predicted stage 2 power system



*Broadview-garrison double circuit 500kV line suffered fire damage in early August.*



*Crews clean up burned areas below power lines.*

emergencies and a Presidential Order was issued requiring federal agencies to take steps to ensure west coast power system reliability. This series of events alerted the Bonneville Power Administration to the possibility of a power system emergency. For that reason, as its first priority, it operated federal hydropower dams through August to ensure there would be enough water to meet predicted power needs instead of maintaining spill for juvenile salmon passage. However, the federal agency continued operations for fish passage as best as it could during the emergency, so the change in priority actually resulted in few changes to fish operations.

BPA officials warned that such incidents, along with a stage 3 emergency in California, could have resulted in widespread power outages throughout the West.

## Changes in account executive roster

### Oster brings experience to TBL

Dennis Oster immediately began calling on southern Idaho transmission accounts when he accepted the position of account manager for the area. Forming



relationships is the first order of business, he said, as he's already made plans to be in the field much of his time "from now until the snow flies."

Oster began his new job in mid-August, replacing Sue Furst who in May accepted a position with the Public Power Council. He brings 25 years of experience to the position, first starting with the Bonneville Power Administration in its environmental department, then moving to supervisor in conservation and then to the power generation group. His most recent post was a five-year stint as account manager with the bulk power trading group of the Power Business Line where he worked with energy marketers, California customers, investor-owned utilities and direct service industries. Oster is a native Oregonian and graduate of Portland State University.

"In my new job, first and foremost I want to provide good customer service for the customers assigned to me," Oster said. "Beyond that it is important to keep customers up to speed with the pace of RTO formation."

He added that he will make sure his customers are informed and involved as the regional transmission organization gains shape. "It may have a profound effect on them and they need to understand the implications.

That's part of my job," Oster said.

He counts as good customer service getting to know customers well and developing a trust relationship with them.

"It's extremely important to spend the time needed to get to know folks, to understand their issues and needs and to find out what they expect from TBL," he said. "These are things I'm doing now."

Oster can be reached at his Vancouver, Wash. office at (360) 418-8282, by cellular phone at (503) 329-7021, or e-mail at [dmaster@bpa.gov](mailto:dmaster@bpa.gov).

### Morgan takes on PCS and RTO duties

Nancy Morgan joined the TBL Sept. 11 as account executive focusing on personal communications systems, also known as PCS or wireless. She replaced Kevin Ward, who moved on a special assignment to Field Services.

Like many at the TBL, Morgan will spend her first few months immersed in RTO West activities as project manager for a series of 14 to 15 public workshops around the region describing, in non-technical terms, the RTO West filing to the Federal Energy Regulatory Commission. The first workshop is Oct. 17, only one day after RTO West files its plan with FERC.

Morgan joined the Bonneville Power Administration in 1977, but most recently she was both BPA's Corporate Contracting manager and its Shared Services Internal Operations manager. Shared Services provides personnel, purchasing, workplace and computer services to Corporate and the Business Lines.

Morgan can be reached at her Vancouver, Wash. office at (360) 418-2175, or e-mail at [nemorgan@bpa.gov](mailto:nemorgan@bpa.gov).

## Fiber to feed Tillamook from Keeler Substation

Construction began last month on a fiber optic line from the Bonneville Power Administration's Keeler Substation in Hillsboro, Ore., to its Tillamook Substation. The addition of fiber along the route will especially strengthen BPA communications between Carlton, Ore., and Tillamook, replacing radio communications with the fiber.

The project, which will be completed in November, places a 36-fiber cable on southerly of two possible transmission routes between Hillsboro to Tillamook.

Bob Lahmann, Transmission Business Line account executive, said the standard for the TBL is to place 72-fiber cable along main grid lines, most of which would eventually be used solely for BPA communications.

"This is not a main grid route. Still, the 36-fiber line will provide an opportunity for public benefit use and for some commercial use until BPA needs its full capacity," Lahmann said.

The commercially available fiber has been licensed to a telecommunications company, which is funding the approximately \$4 million project.

The route winds through Beaverton, Forest Grove, Carlton, then near McMinnville on its way to Tillamook.

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Send your letters and comments to your account executive or to "Access: Letters to the Editor," Bonneville Power Administration, Transmission Business Line – T-Dittz, P.O. Box 491, Vancouver WA 98666; e-mail: [skblair@bpa.gov](mailto:skblair@bpa.gov)

## RTO characterized by flurry of activity before filing

Since the formal public collaborative process wrapped up on Sept. 1, RTO West filing utilities continue to drive towards consensus on key issues and to prepare for the filing. Project manager KEMA consultants and filing utility representatives are working on final reports that will provide the information necessary to go into an RTO West filing to the Federal Energy Regulatory Commission Oct. 16.

The Regional Representatives Group has been the public forum to debate the substantive issues and, where possible, come up with consensus proposals to address those issues. The RRG has been meeting since April, but went into overtime the last two weeks in August to try and reach consensus on the remaining issues. While the group did not come to consensus on all the issues, it did make progress. Representatives from

throughout the region spent a substantial amount of time discussing alternative proposals in an effort to seek resolution. The RRG wasn't able to bring the region to resolution on the remaining policy decisions, but it was able to narrow the key issues.

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NOT ALL ISSUES WILL BE RESOLVED BEFORE RTO WEST FILES WITH FERC, BUT THAT'S NOT A PROBLEM AS LONG AS THE REGION AGREES TO AN OVERARCHING DESIGN FOR THE RTO AND DESCRIBES AN AGGRESSIVE PLAN FOR RESOLVING THOSE ISSUES.

PEGGY OLDS

RTO PROJECT MANAGER, TBL

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The filing utilities now take on the responsibility for overseeing production of the RTO filing document. BPA will continue its outreach efforts with its customers, constituents, tribes and other interested parties between now and the filing to address their issues and keep them informed. The RRG will convene one more time on Sept. 20 for a presentation of the filing contents and what is likely to happen after the filing is made.

According to Peggy Olds, RTO project manager for the Transmission Business Line, not all issues will be resolved before RTO West files with FERC, but that's not a problem as long as the region agrees to an overarching design for the RTO and describes an aggressive plan for resolving those issues.

"Any point in the discussions between now and when the final document is completed will simply be a snapshot of where the discussions are at that moment," Olds said. "The debate has been extremely healthy and robust, but at this point in early September, the filing utilities still have a lot to do. Yet, most of us still are focused on the Oct. 16 date when we plan to have enough agreement that we can put together a coherent filing."

One area where a tentative agreement has been reached is the planning role of the RTO. The RRG initially agreed that the RTO would provide all central planning for the region. But, the issue was reopened at the next meeting when independent transmission company representatives suggested they should be responsible for planning in their respective service territories. In essence, they asked to split that function between them and the rest of the region. The final agreement was for the RTO to have primary responsibility for overall regional

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### Congestion management raises issues

In its order this year to establish regional transmission organizations, the Federal Energy Regulatory Commission listed congestion management as one of eight minimum functions of any RTO. An RTO must identify in its filing Oct. 16, a process by which it will deal with situations on flowpaths when demand is greater than capacity.

By early September, RTO West discussions had identified some 40 flowpaths where there may be commercially significant congestion. However these paths are identified, FERC's vision is that congestion will be dealt with through a market-based congestion management system.

"Currently, costs for using a transmission path, whether congested or not, is based only on an access cost which pays for the system's embedded costs. Those include the interest and amortization on the investments, plus operations and maintenance," said Brian Silverstein, market mechanism project manager, Transmission Business Line. "But, in the RTO, when a path is full and it needs to be managed, then there are congestion costs."

One piece of a market approach to deal with congested paths is to have an annual auction of transmission rights. That way the highest valued use gets the space, he said. Additional rights could be released in monthly and even daily auctions. One of the advantages of such a system, according to Silverstein is that it lets the market know where and when to spend money to fix congestion problems.

But, that introduces a number of issues that must be resolved before the RTO actually sets up shop.

"One of the most important issues is to provide equivalent value for existing rights. In other words, how do we translate existing contracts and obligations into firm transmission rights in the RTO?" Silverstein said. "Then, we have to ask if those with pre-existing rights need to participate in the auction. What if a particular path is over allocated on day one? What do we do about load growth?"

Silverstein said that these and other questions were addressed by RTO West's RRG. Issues left unresolved must be worked out by the filing utilities.

## RTO characterized by flurry of activity before filing

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planning and take a proactive role to coordinate with transmission owners to resolve problems and compel solutions to address reliability problems. However, it would not preclude any transmission owners from having their own planning functions.

Progress has also been made in narrowing such issues as congestion management, transmission pricing (see related story on congestion management) and which facilities will be included in the RTO.

The implementation workgroup recommended that the RTO West primary control center be housed in an existing facility, a concept they call a "brownfield" development. The workgroup has not made a final recommendation on where that would be, but are focused on the Vancouver/Portland, Ore. metro area. Use of Dittmer remains an option, though, if RTO West cannot find a suitable building. Based on initial budgets by the group, the cost of RTO West is estimated at \$80-\$100 million for startup costs and about \$50 million annually.

### NEXT STEPS:

**SEPT. – OCT. 15** – Filing utility representatives continue to address remaining issues, including meetings with their respective interest groups, and prepare filing documents.

**SEPT. 20** – RRG will host one final large public meeting in Portland to go over the components of the filing.

**SEPT. 28** – Filing utilities' pre-filing conference with FERC staff to get go over final details of the filing.

**OCT. 16** – RTO filing to FERC

The process to develop the RTO West proposal to FERC is public and ongoing. The best way to keep up with this fast-moving process is to log onto the Internet and point your browser to [www.rto west.org](http://www.rto west.org).

## TBL asks customers about Celilo investments

Two southern partners in the Pacific high-voltage direct-current Intertie propose to replace part of the Sylmar converter station at the southern end of the Intertie for more than \$100 million. The Los Angeles Department of Water and Power and Southern California Edison asked the BPA to commit to maintaining the same capacity at Celilo at the northern end for the next 30 years, and to do it on the same timeline as the Sylmar project.

The request by the partners and the timeline pose a dilemma for the Transmission Business Line. "At this point, we're not sure if that is the right thing to do," said Kip Moxness, TBL customer account executive. "However, we will begin a public process to obtain the input of regional customers, constituents and interest groups. The process will identify issues and make recommendations on how we should respond to this request."

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**"OUR INITIAL ANALYSIS GAVE US REASON TO BELIEVE THAT A MAJOR INVESTMENT AT CELILO TO MAINTAIN THE 3,100 MW LEVEL MAY NOT BE JUSTIFIED ABSENT A MAJOR CUSTOMER COMMITMENT TO INVEST LONG TERM IN THE AVAILABLE DC CAPACITY."**

**KIP MOXNESS**

**TBL ACCOUNT EXECUTIVE**

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A 1993 fire at Sylmar and a 1994 earthquake in Los Angeles, Calif. severely damaged the converter station. The southern partners expect to begin the replacement project in January 2001 and complete it by December 2003.

The work at Sylmar would maintain the capacity of the southern end

of the DC Intertie at 3,100 MW for at least 30 years. But ratings at both Sylmar and the Celilo converter station, at the northern end of the line, determine the capacity of the DC line. If either station is decreased, then the total DC Intertie capacity is decreased.

The dilemma comes in part because of the timing of the Sylmar project, Moxness said. The TBL did not include such improvements as converter replacements at Celilo in its current capital investment program approved in its 2002-03 rate case because it had not planned to make those investments as early as January 2001. However, it did include funds to maintain the DC Intertie's 3,100 MW rating, including new control interfaces, along with a number of other projects to improve transmission congestion in the Northwest.

To look more closely at the future of the DC Intertie from BPA's perspective, TBL recently completed a study that examines future surpluses in the Pacific Northwest and proposed new resource development in both the Pacific Northwest and Pacific Southwest. The study determines, based on historical precedent, how much of the 3,100 MW of capacity might be used on a long-term basis in the future.

It shows that the DC Intertie gets heavy use during the peak marketing season – May through August – when the Pacific Northwest historically sells its lower cost surplus power to California. But there are many months of the year in which the DC Intertie is used very little.

"Our initial analysis gave us reason to believe that a major investment at Celilo to maintain the 3,100 MW level may not be justified absent a major customer commitment to invest long term in the available

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## TBL asks customers about Celilo investments

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DC capacity,” Moxness said. “But if we get the commitment, that would help generate the funds to pay for a major replacement project at the northern end of the DC Intertie.”

The BPA study looked at the projected use of the Intertie through 2019. It considered a number of paths TBL could take, but it looked most closely at two basic alternatives:

- Maintaining the PDCI at its current rating of 3,100 MW for as long as economically feasible.
- Eventually retiring the mercury arc valves, which are costly to operate and maintain. That would leave the DC capacity at about 1,100 MW.

Although Celilo has been extensively modified since 1970, the original mercury arc valves are now approaching the end of their useful lives and

TBL will have to make substantial investments to replace the aging equipment during the 30-year period, Moxness said. The mercury arc valves were designed for a 15-year life, but Celilo maintenance crews have been able to extend their life by finding sources for parts and by making some components.

“While it may be possible to do this for another 10 to 15 years,” Moxness said, “the cost of this maintenance will continue to rise as more and more components wear out.”

Before it takes the next step, BPA will ask for public comment on the DC Intertie and the southern partners’ request. The public process runs through Nov. 15.

### *Two public meetings are scheduled:*

An overview of the economic study will be provided Oct. 10, 8 a.m.-noon, at the Embassy Suites Portland Airport, 7900 NE 82nd Ave., Portland, Ore.

A public meeting will ask customers and constituents to comment on the southern partners’ request Nov. 7, 8 a.m.-noon, also at the Embassy Suites Portland Airport. Participants will be asked to explore various options including ways to ensure a long-term revenue stream to pay for a replacement project at the northern end of the DC Intertie, if that were to be the BPA Administrator’s decision. The revenue stream could include such things as longer-term contracts, an auction, or some other option.

For more about the DC Intertie issue, study and process check the web site at <http://www.transmission.bpa.gov/tblib/dcintertie>.

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