

PNM Electric IRP
Public Advisory Group Meeting Minutes
Tuesday, October 23, 2007
8:30 a.m. to 12:30 p.m.

October Meeting Agenda
Fourth Public Advisory Meeting
Alvarado Square, The Kitchen

TIME	TOPIC
8:30-8:45	Welcome and Introductions Don Brown, Director, Corporate Communications, PNM
8:45-9:15	Presentation of Results How PNM intends to communicate the results of the IRP process Evelin Wheeler, Director, Strategy, Planning and Analytics, PNM
9:15-10:30	Reliability What reliability means and how it is measured in portfolio analysis Cindy Bothwell, Manager, Integrated Resource Planning, PNM
10:30-11	Break
11-12:15	Cost What cost means and how it is measured in portfolio analysis Cindy Bothwell
12:15-12:30	Overview and Wrap Up Pat O'Connell, Project Manager, PNM

List of Participants

NAME	ORGANIZATION/AFFILIATION
Alletta Belin	Belin & Sugarman
Ben Phillips	PNM
Bill Payne	self
Bonnie Greathouse	ACORN
Brent Barkett	Summit Blue
Carolyn Fudge	City of ABQ
Chris Cameron	SNL
Cindy Bothwell	PNM
Clyde Wheeler	Self
Craig O'Hare	EMNRD
David Griscom	Regional Development Corp.
Evelin Wheeler	PNM
Frank Stern	Summit Blue
Gail Ryba	SWEEP
Greg Lach	shareholder/student
Greg Nelson	PNM
Jack Sidler	NMPRC
Jeff Mechenbier	PNM
Jeff Taylor	Attorney General
Jim Brack	NMPRC
Neva Van Peski	League of Women Voters
Pat O'Connell	PNM
Prasad Potturi	NMPRC
Robb Thomson	New Mexico Interfaith
Steve Michel	WRA
Tom Singer	NRDC
Tom Wander	PNM
Vincent Humann	self

8:30 Welcome and Introductions—Evelin Wheeler

Participants were welcomed to the meeting and encouraged to actively participate in the day's discussion as well as the IRP process as a whole. PNM's ultimate goal from the IRP process is to develop a reliable, cost effective, and environmentally sound system expansion plan.

Group introductions then occurred

8:45-9:15 Presentation of Results—Evelin Wheeler

Evelin Wheeler, Director, Strategy, Planning and Analytics, PNM, described how PNM intends to communicate the results of the IRP process and requirements of the IRP rule, and the timeline.

Issues and questions raised in the discussion included the following:

- Consideration of rate impacts

- IRP rule does not define “cost-effective” it is not least cost the way PNM will do it.
- What about showing trends of rate impacts? PNM could do a graphic to show effects over time, which NPV wouldn’t capture.
- To look at bill impacts, PNM would have to consider timing of rate cases, cost of capital
- Typically a two year impact for rate cases
- Need a holistic benefit/cost analysis with all externalities, hasn’t been done
- PNM should just look at NPV, ratemaking, timing are not part of IRP.
- The IRP does define cost-effectiveness in section 17.7.3.7.I: minimize NPVRR.
- Plan on two months for impacts and rate considerations.
- Coordination with renewables and EE filings. This is a key point--will have to talk about 4-year action plan.
- Timing for comments
 - Spring is critical time – need sufficient time to make and incorporate comments
 - Report must be filed June 30
 - Intention is to get comments before whole report goes out.
 - Three week to six week period is needed for providing comments
 - May need two month for incorporating.
 - Those that have been through this process before say lots of time is needed for this process.
 - What if stakeholders find out model doesn’t do DSM or IGCC well? Can’t anticipate that until it is in report.
 - Would rather see rough draft early on.
- Breakout sessions
 - Breakouts facilitated by Summit Blue would be useful. Would allow more in-depth discussions.
 - Would be good to have these early on.
 - Will help address issue of different levels of interest and technical facility.
 - This is something PNM can do.
 - Would be open to everyone, participants will self select in.

- PNM will set dates.
- At least one should be in Santa Fe.

9:15-10:30 Reliability, Cindy Bothwell.

Cindy Bothwell, Manager, Integrated Resource Planning, PNM, discussed what reliability means and how it is measured in portfolio analysis.

The discussion and comments included the following:

- Distributed solar and efficiency are considered part of load, reserves not carried.
- If PV goes out due to lower solar radiation, load would go down as well.
- PNM makes assumptions made about daily wind patterns as part of system operation.
- If power goes out due to generator failure, PVs won't go down as well because the system can isolate local circuits.
- PNM has given zero value for wind capacity, looks like it will go to 5-10%. PNM will focus on top ten peak days, but haven't settled on method.
- Model plans to meet 15% reserve margin, assuming appropriate capacity credit for all resources.
- Solar capacity credit is about 55%.
- Solar in AZ might lose power due to clouds when load in Albuquerque is not lost, due to geographic separation.
- If PNM lost all four San Juan units it would not be able to carry the load. PNM plans for single contingencies, not multiple contingencies.
- The 7.6% of generation from SPP is a PPA, mix of resources.
- The report will show availability by resources modeled using expected availability, also load shape, contribution to peak, annual energy.
- PNM's generation units are fairly old. However, older units tended to be over-engineered, also parts are continually replaced. Capital will be invested to keep the forced outage rate constant.
- What loss of load probability is acceptable?
- PNM does not have a specific level, other than what is implicit in the 15% reserve margin target.
- PNM will quantify attributes of all resources and how model will be treating them.
- The expected availability model allows specification of seasonal and hourly patterns. Consequently, a 70% forced outage rate is different than a 30% availability.
- Outages get translated into costs through emergency purchases modeled at a high cost. These purchases only come in when load is not met.

10:30-11:00 Break

11-12:15 Cost Cindy Bothwell

Cindy Bothwell discussed what cost means and how it is measured in portfolio analysis. Discussion ensued.

- Dry cooling entails significant capacity deration during peak. PNM is considering hybrid cooling. It is considering the appropriate deration.
- Water scarcity is considered as part of capital cost. Drilling wells will be included as appropriate.
- Heat rate reflects efficiency of plant, expressed as energy in (Btu) over energy out (kWh).
- The uneven spread between low and high gas prices is based on experience – highs tend to be more dramatic.
- The spike in gas prices in August is due to demand for generation to meet cooling requirements.

- PNM uses long term forecasts from Woods McKenzie and CERA. PNM will use these forecasts in the risk analysis
- The major forecasters did not project the jump in gas prices from \$2.50 to \$6.00. Need to consider this type of unanticipated event in the process?
- The escalation rate for gas is constant over time.
- The slope of levelized costs PC option vs. capacity factor is the same as PC with CCS. This is because most of the costs are fixed.
- The technology assumed for CCS is amine technology.
- PC/CCS may not be more expensive than IGCC/CCS for Western coal.
- Margin of error should be considered in making decisions between options. For example, if PNM has a fleet of a certain type of plant with spare parts, it might want to build another like it if cost differential to another type of plant is small.
- The sources of cost data include both PNM and generic data. PNM uses PNM data when it has appropriate experience.
- PNM will document all data.
- Risk and uncertainty is a prime breakout topic.
- Cost escalators should apply equally to all technologies. They all use the commodities that have been increasing in price, not exactly to the same extent, but within a reasonable margin of error.
- Costs annualized over 30 years.
- If costs were levelized with kWh, rather than kW they would be high on the left side and low on the right.
- Levelized costs include fuel costs.
- Why not use the costs for CO2 presently seen within the European Trading Scheme. The IRP process has specified certain levels.
- Unclear if the costs shown in the presentation costs of carbon or costs of CO2. Need to clarify.
- The levelized costs assume an escalating cost of carbon.
- PNM picks the size of plants used for the cost estimates based on the typical economic size. PNM will get partners to match the size to need if necessary.
- A breakout session on cost data would be good.
- PNM should make some assumptions about technological improvement for CCS and solar.
- CCS can be added to existing PC plants. But it is more expensive than planning in advance for it.
- The most cost-effective portfolio is the one that is the most robust from a risk and uncertainty perspective. PNM will apply certain sensitivities to inputs, creating thousands of portfolios. Very similar portfolios will be eliminated. PNM will then look at how the remainder responds to risk.

12:15-12:30 Overview and Wrap Up Pat O'Connell, Project Manager

Pat O'Connell thanked everyone for their active participation, and noted that many good ideas were raised. The next meeting will be November 27 at 8:30.

The group discussed sharing e-mail addresses. Hearing no objection, PNM will send out e-mail addresses of participant to all. Website is www.pnm.com, type in electric IRP.