Indianapolis Power & Light Company
2016 IRP Public Advisory Meeting #1
April 11, 2016

Meeting Notes

Welcome & Safety Message
Bill Henley, IPL Vice President of Regulatory & Government Affairs

Mr. Bill Henley welcomed everyone to the first public advisory meeting for the 2016 Integrated Resource Plan (IRP). He said he was happy to see some participants from the last IRP process as well as new people. He thanked Barnes & Thornburg for hosting the meeting, and expressed his gratitude to all the IPL staff who worked hard to put this meeting together. For his safety message, he directed participants to the map on the back of the agenda showing emergency exit procedures from the building and explained the process.

Mr. Henley explained that there are three objectives for the meeting today: listen to stakeholders, engage in meaningful dialogue, and continue building relationships based on trust and shared knowledge.

He noted that, where possible, publicly available information is being used in the presentations today, to avoid the need for anyone to have to sign confidentiality agreements. Several things have changed based on stakeholder input from previous meetings that will be discussed as we go along today. He introduced Dr. Marty Rozelle, the meeting facilitator.

Introductions & Meeting Objectives, Agenda Review, Guidelines
Dr. Marty Rozelle, The Rozelle Group Ltd.
(slides 3-7)

Marty Rozelle asked participants to introduce themselves. There were also several participants on the telephone joining the meeting. Dr. Rozelle said the agenda was a combination of presentations, discussions, and group exercises. She said there would be time for questions and clarification after each presentation. She asked phone participants to type their questions into the WebEx system so they can be read to the group and answered.

If there are additional questions or comments after the meeting today, participants can submit them by April 18, and IPL will respond by May 2. The second workshop will be held on June 14, and stakeholders are invited to make their own presentations at that meeting by requesting time by May 17. Dr. Rozelle introduced Ms. Joan Soller, IPL's Director of Resource Planning, to provide an overview of the company and the IRP process.

Introduction to IPL's Integrated Resource Plan
Joan Soller, IPL Director of Resource Planning
(slides 8-18)

Joan Soller described her role and background with IPL. She gave a brief profile of Indianapolis Power & Light's service territory and generating portfolio. IPL serves all of Marion County a some of the ten surrounding counties. There are 480,000 customers in a 528-square-mile service territory. She showed a map locating generating facilities, noting that Harding Street will be totally converted to gas firing by the end of the month. This was a topic of particular interest to stakeholders during the last IRP public workshops. Coal retirement is occurring at Eagle Valley. IPL also has other natural gas and wind resources and about 50 megawatts (MW) of demand side resources.

She explained that an IRP represents how a utility expects to serve its customers over the future 20 years. It's important to understand the IRP represents a snapshot in time, and it is updated every two years. She showed a graphic of the IRP process, including forecasting, identifying potential resource options, identifying risks, and developing potential scenarios, or alternative visions of the future. Models are then run on alternative scenarios to produce various portfolios of generating resources that could be used to meet demand under each scenario. Portfolios are compared against common metrics to see how they perform. Ms. Soller mentioned that some participants may have heard about the Tennessee Valley Authority approach in which they used 30 sets of metrics, noting that IPL will not be doing anything that complex. Today we'll be talking about supply and demand resource options, key risks or "drivers", and possible scenarios as shown in green on the chart.

In an attempt to reduce repetition at individual IRP workshops, Ms. Soller said that the Indiana utilities hosted a joint IRP informational meeting on February 3, 2016 to provide stakeholders with a more comprehensive description of how integrated resource planning is done by all utilities. *IRP 101* workshop materials are available online. Therefore, this session will focus mostly on IPL's specific situation. She emphasized that IPL's objective is to identify a portfolio that provides safe, reliable and reasonable least-cost energy service to its customers over the next 20 years, considering both risks and stakeholder input.

She updated participants on actions that IPL has taken since the 2014 IRP process. The short-term action plan that has been implemented was influenced by many suggestions from stakeholders, and included the following:

- Transmission expansion projects
- Demand side management (DSM) program implementation (further discussed today by Jake Allen)
- MISO (Midcontinent Independent System Operator) capacity purchases
- Mercury and Air Toxics Standard (MATS) regulatory compliance
- National Pollutant Discharge Elimination System (NPDES) regulatory compliance
- Installation of Eagle Valley combined cycle gas turbine (CCGT) unit, adding 671 MW
- Retirement of Eagle Valley coal-fired units 3 - 6
- Harding Street units 5, 6 & 7 refueling/conversion to natural gas
- Blue Indy implementation (public shared electric vehicle program)

Ms. Soller talked about proposed enhancements to the 2016 IRP process based on stakeholder feedback. IPL will be addressing stakeholder suggestions that include improving load forecasts,

more robust modeling of DSM, better estimates of customer-owned and distributed generation adoption, incorporation of probabilistic methods, and stakeholder process enhancements.

She outlined the IRP timeline leading to a filing with the Indiana Utility Regulatory Commission in Fall 2016. This process will include two more stakeholder meetings in June and September. She also mentioned that data used to model scenarios were purchased from IPL's vendor, ABB. This is called the "Reference Case" and was updated in Q4 2015.

Supply Side Resources
Joan Soller
(Slides 19 – 23)

The traditional electric generators owned by utilities are typically referred to as "supply side resources". For this IRP, IPL may consider various mixes of natural gas turbine generation, wind, solar, energy storage, nuclear, or combined heat and power (co-generation). Electricity is delivered to customers from generation sources at a transmission voltage, stepped down to distribution voltage, which is then stepped down further to homes and businesses. Ms. Soller noted that the industry is going through a lot of changes where customers take actions to reduce their load.

She mentioned that distributed resources can be supply side resources or demand side resources. They are typically close to the load they are serving. A participant asked how IPL will continue to treat distributed resources in Purchase Power Agreements. Ms. Soller said they will model purchase power agreements as a supply side resource.

Model inputs for the various types of supply side resources include nameplate capacity, capital construction costs, fixed and variable operating and maintenance costs, operating characteristics, and typical availability. Transmission costs are not included here, nor are site development costs.

Ms. Soller showed a graph of the IPL typical summer load and the resource mix used to serve it. These include base load, intermediate, peaking, solar, and wind resources. She noted that different scenarios may show resources as base load, intermediate, or peaking depending on the scenario.

Distributed Resources Discussion
John Haselden, IPL Principal Engineer
(Slides 24 - 35)

John Haselden introduced himself and said he will talk about distributed resources in IPL's service territory. These include customer-sited generation such as diesel generators, which are not synchronous with IPL's system. EPA regulations now limit the run times allowable for generators, so they will not be considered as resources in 2016 although they have provided about 41 MW of capacity in the past.

- A participant asked what kinds of customers use diesel generators.
    - Typically, they are larger facilities that must have a reliable power source at all times, such as hospitals, data centers, and wastewater treatment plants.

Combined heat and power is another kind of distributed resource. This requires some substantial investment on the part of customers, but they can be an efficient and economical power option for industrial customers, providing between 5 and 100 MW of energy. Natural gas prices continue to be low and IPL discusses this option with customers. The presence of the Citizen's steam system provides an economical alternative to thermal self-generation and reduces the attractiveness of CHP where steam is available. Future options may include fuel cells or micro-turbines.

Local wind generation is not a major contributor to the resource mix as the wind resources in this part of Indiana are poor. Costs tend to be high due to variable generation and poor wind. Biomass generation has favorable operating characteristics and can provide base load generation if sufficient resource materials are available. However, these generators usually require large farms or other reliable sources of biomass that do not occur in the urban IPL service territory.

Solar photovoltaic systems provide about 95 MW of power for IPL. These units can take up quite a bit of space (typically 5 to 7 acres per MW of solar resource),. Many solar projects are rooftop solar. Solar has a fairly low capacity factor compared to other resources (15-18%) and only provides variable production. Also, solar production does not operate in exact coincidence with the IPL peak. Two commodities are produced by solar generation: energy and credits as reflected in the solar renewable energy credit value, for which there is a small market. Mr. Haselden said that about 5 years ago IPL had 7 net metering customers, and now there are 85 comprising 1.45 MW of capacity. IPL's renewable energy production rate is 95 MW of operating solar, providing approximately a 48 MW contribution to capacity.

- A stakeholder noted that the recent Environment America report[1] that lauds IPL for solar participation shows different production numbers than these. What's the discrepancy?
    - Although IPL reported 96 MW (AC), the end of year report showed 124 MW (DC).The authors converted the IPL number to DC, which reflects their estimation of the losses in the conversion from DC to AC.

Mr. Haselden explained that although the cost of solar panels has gone down somewhat, some tariffs are being applied and hard costs of equipment haven't changed; therefore, overall costs are relatively flat. Likewise, costs of wind generation are not expected to be reduced much in future.

He explained that microgrids provide the ability for an entity to become self-sufficient and disconnect from the utility. They typically run on generation sets but could use batteries or other technologies. Regarding energy storage, IPL has a 20 MW battery under construction now that can be used to support the grid including frequency support or reducing the variability of solar and wind. Voltage controls, or conservation voltage reduction, which controls the voltage at both ends of the system, provided about 20 MW[2] of energy to IPL. Electric vehicles could also be considered as a distributed resource in the future when the technical and business challenges are worked out.

- A participant noted that Mr. Haselden didn't mention three wastewater treatment plants in Marion County that could be used for biomass production, and asked if IPL has looked at this.
    - Mr. Haselden explained that IPL has talked with the operators. Anaerobic digesters require warmth. The plants use a lot of the heat produced by methane to keep their systems operating, so the residual amount of methane available for IPL generation is limited.
- Other things like fryer oil from restaurants, bakeries, etc. could possibly also be used in an anaerobic digester. Why hasn't there been more interest in this in large urban areas?
    - Some facility waste products include additives. Digesters need pure waste streams like animal waste. Dairies, the Indianapolis Zoo, the state fair, and other producers have been looked at. The main issues are reliable and continuous waste streams and transportation costs. Vegetable oils in Indiana are mostly converted to biodiesel, which is more economic.
- Please clarify whether the cost presented for solar is nominal. Is wind cost nominal or in real dollars? Is it adjusted for inflation?
    - Solar cost represents overnight capital cost, or dollars per KW, and is nominal. Wind is shown in real dollars.

[1] http://www.environmentamerica.org/sites/environment/files/reports/EA_shiningcities2016_scrn.pdf

[2]There are additional benefits of CVR totaling 2 MW due to avoided reserve margin. This will be discussed more fully in the June 14 meeting.

Demand Side Resources
Jake Allen, IPL Demand Side Management Program Development Manager
(Slides 36 - 49)

Jake Allen has been working on demand side management (DSM) for about 20 years. He also assists with IPL's green power program, and he works with customers who are interested in net metering as well. DSM encompasses both energy efficiency (measured in kilowatt-hours("kWh") and demand response (measured in kilo-watts "kW"). Demand side resource alternatives include energy efficiency programs like residential lighting (which costs about $.19 per kWh of first year saving to install but since this measure has a life of 5 years or more, the annual cost of saved energy is about $.04/kWh). The small business direct install program has a costs of about $.30/kWh of first year savings to install and – assuming a measure life of 5 years – has an annual cost of saved energy of about $0.06/kWh.

Demand response programs include air conditioning load management (costs for demand response programs are usually expressed on a $ per kW saved or in the case of ACLM the costs is about $300 of investment for 1 kW of demand savings), which has the potential to save about 30 MW, and conservation voltage reduction that can save about 20 MW overall. Customers must take some action to make demand side resources work.

In comparing supply and demand side resources, Mr. Allen noted that supply side resources typically are of larger size than blocks of demand side resources and take more time to plan and construct. IPL has offered DSM for more than 20 years. IPL has a goal in its current DSM offerings to achieve about savings of about 1.1% of total sales. The 1.1% of sales is before the opt-out customers are considered. The opt-out is available to customers who use more than 1 MW of power. Opt-out eligible sales represent about 26% of IPL sales and about 81% of the sales eligible for opt-out have opted out. When the opted-out sales are considered, the IPL energy efficiency goal is nearly 1.5% of the remaining non opted-out annual sales.

Currently there are nine residential and four business programs that are offered. These programs are "tried and true". IPL wants to continue offering them through 2017. Through DSM, IPL has saved about 775,000 MW hours – enough to serve 65,000 homes –over the 6-year period since 2010. Forecasted savings for 2016 are about 1.1% of total sales.

- A participant asked what is actually happening, relative to IPL's goal of saving 1.1%. It seems like last year's projection was much lower than this, is that correct?
    - If we hit this goal, 160,000 MWh would be 1.1%. Mr. Allen noted that IPL is trying to regenerate interest in the Green Power program.
- A participant complimented IPL on the Green Power program, including the price. Also, the Peer Comparison information provided to customers is very helpful.
- A stakeholder said that a lot of the information on these slides is confusing because different measurements are used throughout, making it very hard for people to understand or compare data ("apples and oranges") She gave several examples.
    - Yes, point taken. Costs for each scenario will be different, depending on capacity factor energy costs, commodity prices, etc. Inputs to models aren't the same, but the outputs will be the same. This is the first time IPL will be modeling DSM this way.
- Could we have a comparison to national studies in future meetings, e.g. similar to what

Lazard[2] does using a range of national energy costs?
    - Mr. Allen was not familiar with this reference. He said that IPL does benchmarking to look at actual costs to derive model assumptions. He offered to review other data if desired.
- A participant observed that some people don't like the Green Power program because it uses RECs (renewable energy credits) from out of state. Can in-state data be used?
    - Yes, we consider the cost of Indiana versus out-of-state RECs every time we acquire them. The decision to buy out of state was made in the past, but part of future portfolios will probably include more in-state sources.

Mr. Allen discussed DSM guiding principles for IPL. These include programs that are inclusive for customers in all rate classes, are appropriate for the market and customer base, are cost effective, modify customer behavior, and provide continuity from year to year. Opt-out for large industrial customers is a planning consideration. About 81% of large C&I sales that are eligible for opt-out have already opted out. Cost effectiveness is also a continuing challenge; for example, the trends from incandescent to CFL to LED light bulbs.

He told the group that this will be IPL's third Market Potential Study, which started in late February. The consultant, AEG, has begun the 2018-2037 study, and will do a screening analysis to prepare for IRP modeling inputs by May. IPL will propose an extension of current programs for another year, and will do a filing to the Commission in May requesting this, which will update the 2015-2017 DSM Action Plan. He invited participants to let IPL know about any ideas they may have for DSM programs.

- A participant asked whether, as part of this planning, IPL looks at rate design issues such as recovery of stranded assets, rate design, fixed cost charges imposition. These could have a big impact on the rates at which DSM can be deployed.
    - No, we don't look at rate design issues in these DSM analyses. If stakeholders have any ideas about this, we'd be happy to hear them.
- A stakeholder asked IPL to please abandon the declining block rates. They are counterintuitive. He urged the company to look at rates designed to encourage conservation, not the opposite. How does rate design come into play in IRP?
    - Mr. Allen said that rate design is not part of the IRP process.
    - Mr. Henley responded also by noting that IPL has a rate order within 30 days, so IPL will not partake in ex-parte communication.

[2] Lazard Levelized Cost of Energy Analysis: https://www.lazard.com/perspective/levelized-cost-of-energy-analysis-90/

DSM Modeling Options
Erik Miller, IPL Senior Research Analyst
(Slides 50 – 57)

Erik Miller works on the Resource Planning team with focus on DSM planning and evaluation and load forecasting. Prior to working at IPL, Erik worked for CLEAResult and Hoosier Energy. His presentation provided an overview of modeling DSM as a "selectable resource" within an IRP.

As suggested by stakeholders in the 2014 IRP process, IPL will model DSM as a "selectable resource" in its 2016 IRP. In the past, IPL performed a Market Potential Study (MPS) to determine the amount of cost effective DSM available to implement. Results from the MPS were evaluated using the standard DSM cost tests (TRC, UCT, PCT, and RIM[3]) and formed into a DSM Action Plan which was filed with the IURC for approval. DSM included in the Action Plan was then subtracted from the load forecast used within the IRP; however, the IRP results had no bearing on DSM selection or adoption.

To model DSM as a "selectable resource" within the IRP, IPL will start with a Market Potential Study just as before, but will be use it as a screening tool to identify the achievable potential of DSM within IPL's service territory and not to select DSM for implementation like in prior years. The achievable results will be put into "bundles" that resemble "little power plants" and evaluated alongside power plant resources within the IRP's "Resource Assessment Model." The DSM that is selected in the IRP model will form the DSM Action Plan foundation which IPL plans to file with the IURC for approval.

Utilities use various approaches to "bundling" the achievable DSM results from the MPS into "little power plants." IPL is evaluating which approach to use in this year's IRP. There are pros and cons each; however, no one approach appears to be universally correct. Examples were provided of the different bundling approaches including creating bundles by program and by portfolio. Another example was bundling similar measures like HVAC measures. This approach works well within the IRP model because these measures have a similar load shape.

Overall, the bundles have similar characteristics to supply side resources in that they have a cost to build, installed cost, load shape, timing for implementation, and a ramp rate (up or down over time). Both residential and industrial sectors are included.

Last fall, IPL conducted a pilot run of this approach. The analysis used the current residential DSM programs as bundles. The model suggested staggered program offerings in different years. This may result in continuity issues (one of IPL's guiding principles) where current programs would stop and start up again in later years. Issues with program continuity may lead to market confusion and issues with program performance.

[3] TRC=Total Resource Cost, UC =Utility Cost Test, PCT=Participant Cost Test and RIM=Ratepayer Impact Test.

- A participant asked how residential electricity consumption had changed in the last 5 years, e.g. has it gone down, and what percent of this has been attributable to DSM?
    - There is a trend for load to decrease. This is likely due to energy efficiency, either utility-sponsored or customer adoption. Mr. Miller did not have the load data at this meeting, but will follow up at the next meeting. It's difficult to extract this information from the load data.
    - The IRP forecast will be presented at the next meeting with an overview of the effects of DSM.
- Does IPL get paid for electricity it doesn't sell? If so, how can customers tell what's being sold?
    - IPL does receive reimbursement for lost margins due to its specific approved DSM programs. IPL follows the Indiana Technical Resource Manual that has engineering calculations for savings and other inputs for all the measures that are implemented.
- Please explain more about the *DSMore* modeling program. Can it evaluate net metering programs in addition to DSM?
    - The model uses net present value economic cost/benefit analysis. IPL doesn't use it to look at net metering.
- Could stakeholders suggest inputs to this model?
    - Yes, if there are ideas specific to DSM, IPL could look at them.

Risk Discussion
Joan Soller
(Slides 59 – 61)

Ms. Soller talked about high-level risks that are incorporated into planning. Risks are not necessarily good or bad. There are internal and external risk factors. Main planning risks include environmental regulations, fuel costs, changes to the MISO market, economic load impacts, weather normalized over a 30-year period, customer adoption of DG, and technology advancements such as declining costs of wind and solar. Operational risks include fuel supply, generation availability, construction costs, production costs risk, access to capital, and regulatory risk from FERC and the Commission. She explained current environmental regulations that are included in the modeling and future regulations such as coal combustion residuals which will be incorporated. Environmental risks, including the Clean Power Plan, will be discussed more fully in the June 14 meeting.

She told the group that today IPL would like to ask for stakeholders' ideas about what risks are most likely to occur and are most influential in scenario development.

Risk Stakeholder Exercise

Dr. Rozelle explained that one of the objectives of the exercise is to mix up points of view of various participants. Consequently, she asked participants to break into four groups for discussions. She asked people on the phone to take a break and return after lunch, when we will debrief this exercise. The first exercise is around planning risks, with the hope of developing consensus around the top three or four factors. Secondly, we'll ask you to share ideas about what risks will affect the energy industry over the 5- and 20-year planning periods.

After the discussion groups were finished with the exercise, they reported on the highest priorities/most important risk factors they had discussed. Each table reported the following:

Table 1
Most important factors were environmental regulations, fuel costs, weather, and technology changes. In addition, this group felt there was a continuing risk of:

- Overbuilding – Particularly from the larger customer perspective, overbuilding could result in stranded costs, transmission & distribution system costs for capacity that may not be used in future due to demand response/tariffs/new technologies/infrastructure replacements. This could lead to a lot of cost to recover.
- Cross-class subsidies, e.g. for solar, need to be dealt with through rate structures.
- Climate change and the role of reducing CO_2 emissions in that, as well as the ability to provide reliable power in increasingly frequent bad storms. The environment should be the starting point for other decisions. The Clean Power Plan (CPP) is not punitive, but is a way to save this planet. This will require hard decisions. The impacts on lower-income people will be especially difficult.

Table 2
The most important factor is environmental regulations, including the Clean Power Plan. They talked about other factors, but those did not seem to be as important. IPL's load is unique. There is also a legislative risk; federal legislation may become more influential in future in terms of regulation and policy affecting the utility industry. Some of these factors may not be as far in the future as we think. An additional risk is:

- The unknown level of customer adoption of DG combined with technology advancements (metering, electric vehicles, etc.)

Table 3

- Risk revolves around uncertainty. Environmental regulations fall into this category.
- Adoption of distributed generation (DG) and technology seem to go together, although the rate of adoption and change is uncertain.
- The price and availability of fuel is important. The coal situation has changed dramatically, and the gas market may also change just as rapidly.

Table 4

- Environmental regulations are uncertain.
- Fuel costs – If there is a risk about rising fuel costs, a plan that relies less on fossil fuel will be more effective.
- Technology advancements

On the phone, a participant offered that his priorities are environmental regulations, fuel costs, and technology advancements.

Participants' ideas about what could happen in the shorter- and longer-term planning horizons included the following.

5 Years:

- Concerns about investments by the banking industry in various technologies, such as coal.
- Clean Power Plan
- Adoption of electric vehicles may grow in influence over time.
- Projections of DSM adoption may not be achieved – also applicable in the longer term. How does IPL account for that?
- DG, combined heat and power for large customers, battery storage for large customers – also applicable in the longer term.
- Risk of cyber-attack on infrastructure.
- Risk of physical attack on infrastructure, e.g. a recent attack on a transformer in Silicon Valley.

20 Years:

- Very conservative estimates of climate changes may be on the low side, so there may be 'super storms' that could wipe out infrastructure. For example, in 1859[4] there was a Carrington event, a solar burst that affected electrical systems.
- "Bad actors" with missile technology could create destructive electromagnetic pulses.

LUNCH

[4] https://en.wikipedia.org/wiki/Solar_storm_of_1859

Scenario Discussion
Ted Leffler, IPL Senior Risk Management Analyst
(Slides 63 – 75)

Ted Leffler told the group a bit about his background as a modeler and working in treasury and wholesale power markets, most of which involved risk management. He said that if it weren't for uncertainty we wouldn't need scenarios. These help you move from false certainty to a more robust analysis. Utilities, therefore, need to plan for uncertainty about the potential for change. He described scenarios as macroeconomic simulations of a future world technical, regulatory, and load environment. Scenarios are not resource plans, sensitivities, or preferred outcomes.

It's important to develop the right "base case" scenario, which is a 'middle of the road' view of how the world may be over the planning period without any major changes. Other scenarios may be developed by varying the assumptions of the base case. Resource plans are developed from scenarios. Sensitivities measure what happens to a resource plan if a single variable is modified, such as the price of natural gas.

- A participant asked whether, in identifying sensitivities, IPL defines the low limit, the high limit, and the distribution between them. How do you develop that?
    - Mr. Leffler said that IPL won't address sensitivity boundaries at this meeting. . First, we will be developing scenarios. Sensitivities will be discussed and developed at a later stage of IRP development and through future stakeholder meetings.

In developing the proposed scenarios offered today, IPL reviewed other utility plans, had internal discussions, looked at trends, and considered MISO scenarios. They developed a list of risk factors – or major forces – that may move the world in different directions, as discussed at the meeting today. Different points on the continuum of risk factors are used to define the base case and alternative scenarios.

The scenarios proposed for modeling include the following:

Base Case
Robust Economy
Recession Economy
Strengthened Environmental Rules
High Customer Adoption of Distributed Generation

The Base Case represents a continuation of the world as it is, or a "50/50" forecast. It includes only known events and expected trends, commodity prices influence by the Clean Power Plan beginning in 2022, existing environmental regulations realized, and moderate economic growth. In the Robust Economy scenario, there would be high local and national economic growth. In the Recession Economy scenario, the opposite would occur and there would be national and local economic downturns. The Strengthened Environmental Rules scenario would mean higher compliance costs for known regulations such as CO_2 reductions and Renewable Portfolio Standards. For High Customer Adoption of DG, technology costs would be lower leading to higher customer use.

He showed a series of graphics that illustrated the scaling of assumptions about risk factors in the base case scenario. The Robust Economy scenario would be the same as the base case plan except for the economic growth factors. He also illustrated that once resource plans are developed using scenarios, then sensitivity analyses can run on those plans to determine the impact on those plans of varying individual assumptions.

- As an example of how difficult it is to predict uncertainties, a participant mentioned an initiative in the 1990s to change the direction of the retail industry, and the influence of unpredicted events like collapse of Enron, failure of the transmission grid in California, etc.
    - Mr. Leffler responded that this is why it's important to be flexible in planning and evaluating a wide and creative range of risk factors. Reviewing history is important in this exercise. He gave the advice that "trees don't grow to the sky", meaning that even fast-moving trends won't go on forever but will eventually change.

Stakeholder Exercise

Marty Rozelle gave the group instructions on how to complete the next discussion exercise, which focuses on the proposed scenarios and how they meet stakeholder desires and expectations, as well as suggestions for modifications and improvements.

She told participants to offer any suggestions and ideas you think would be helpful to IPL. She reminded participants to refer to the handout summarizing the scenarios. She also asked attendees to complete the workshop evaluation forms before they leave.

The guiding question for the exercise was, "Keeping in mind your earlier discussions on risks, what aspects of each of the five scenarios do you agree with, and why?" Results of this discussion for all groups are shown in the table below.

Stakeholder Exercise Results

Scenario	Agree	Disagree
Base Case	• CPP – how specifically will it be included? • Pretty much agree with it.	• Smart homes should be included as a technology. • Why not include utility-owned DG? • Fuel prices including natural gas will increase more than indicated. Where is this reflected in the scenarios? (Can run sensitivities for this.)
Robust Economy	• Could happen, would be nice if it did. • Agree that it's a potential future, but would not necessarily lead to increased electricity use. • Could lead to higher DG adoption.	• May not lead to increased use of electricity. • Capital costs might go up due to higher costs of materials.
Recession Economy	• Hope it doesn't happen but it could – depends on things outside of our control, e.g. exodus or influx of people to Indiana. • A possibility. Question of whether shrinking industrial base is unique to this scenario – could happen in others.	
Strengthened Environmental Rules	• Carbon tax is possible.	• What if the Renewable Portfolio was federal or state? Could be part of the CPP. • (Would probably have about the same impact.)
High Customer Adoption of Distributed Generation	• There are reasons other than economic to go to DG. Residents seem to be more attracted, businesses less attracted. • Possible. If it's cost-effective there would be more community solar.	

In response to the question, “If you could create a future scenario that best matches your expectations, what might it look like?”, one participant offered the following description:

> Distributed generation with local power sharing, peer-to-peer. Improved efficiency of appliances, industrial loads, HVAC. Superconductors and carbon nanotube cables – low losses. Broad fuel source mix with complex SCADA needs. Communications blending with distribution. Upgrade to smart grid, resilient against storms, EMP, CME, terrorism. Hydrogen fuel cell cars. Space solar power to provide base load power levels. Massive low-cost storage capabilities to load level wind and solar.
>
> Active research and development points to disruptive technologies in all aspects of energy. Utilities may need to discover alternate business models to remain viable without forcing upholding of the status quo that may invite a severe over-reaction. To avoid disruption begin now to anticipate future trends.

Concluding Remarks and Next Steps
Dr. Marty Rozelle, Facilitator
(Slides 77 – 80)

Dr. Rozelle said that the next stakeholder meeting is June 14. If stakeholders would like to make a presentation, please let IPL know by emailing ipl.irp@aes.com by May 17. She reviewed the proposed agenda for the second meeting in June as well as the final meeting on September 16. If participants have additional comments or thoughts, please submit them by next Monday, April 18, and IPL will respond in a week.

In closing, Bill Henley thanked participants for coming and for their active participation. He assured attendees that their input is always welcome and is not limited to these meetings.