IRP Public Advisory Meeting #3

Workshop with IRP Stakeholders

October 10, 2014

Barnes & Thornburg

11 South Meridian St.

Welcome and Introductions

Meeting Agenda and Guidelines

Presented by Marty Rozelle, PhD, Meeting Facilitator

Meeting Guidelines

- Time for clarifying questions at end of each presentation
- Parking lot for items to be addressed later
- The phone line will be muted. During the allotted question time frames, you may press *6 to un-mute yourself or type a question through the web-chat function.
- To inquire about confidential information please contact Teresa Nyhart with Barnes & Thornburg, LLP at teresa.nyhart@btlaw.com

Meeting Objectives

- Provide the NPDES analysis results driving the conversion of Harding Street Unit 7 to natural gas
- Provide updated IRP modeling assumptions and inputs
- Explain the resource modeling scenarios and preferred resource portfolio
- Present the Short Term Action Plan

NPDES – National Pollutant Discharge Elimination System

IRP Public Advisory Meeting #3

Agenda Topics

- Summary of IRP Public Advisory Meeting #1 and #2
- NPDES Analysis
- Updated Modeling Assumptions and Inputs
- Presentation of Scenario Results
- Short Term Action Plan
- Next Steps

Questions?

Summary of IRP Public Advisory Meetings #1 and #2

Presented by Joan Soller, Director of Resource Planning

IRP Public Advisory Meeting #1

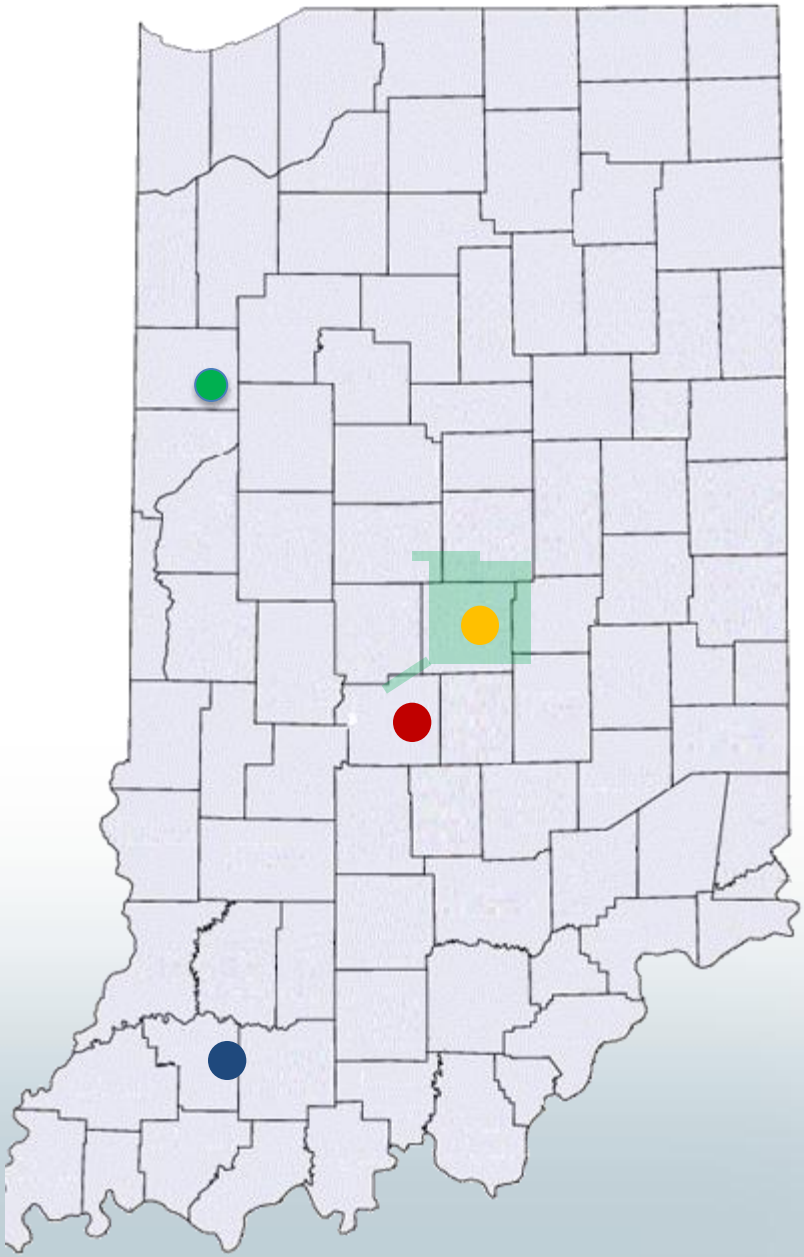
May 16, 2014 --- Agenda Topics

- Introduction to IPL and Integrated Resource Planning Process
- Energy and Peak Forecasts
- Demand Side Management: Energy Efficiency and Demand Response
- Planning Reserve Margin
- Generation Overview
- Environmental Overview
- Distributed Generation
- Proposed Modeling Assumptions

Company Profile

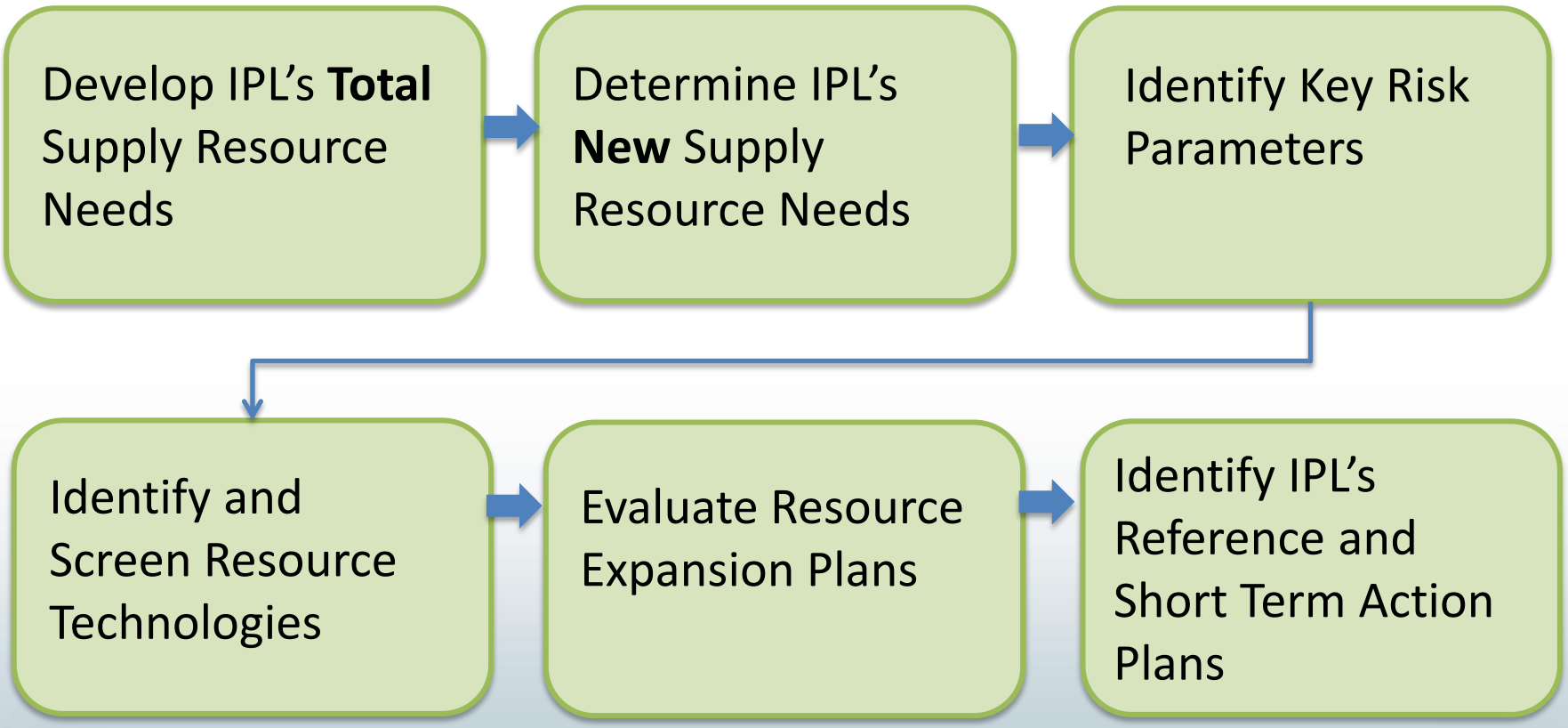
- 470,000 customers*
- 1,400 employees*
- 528 sq. miles territory
- 144 substations

- **Harding Street Station, Georgetown Station, Solar REP Projects -** 1,322 MW**
- **Eagle Valley Generating Station -** 263 MW**
- **Petersburg Generating Station** – 1,760 MW**
- **Hoosier Wind Park PPA** – 100 MW**
- **Lakefield Wind Park PPA** – 201 MW**
  (In Minnesota – Not pictured)



*approximate numbers
**nameplate capacity

IRP Process Overview



Environmental Regulations

- Current Environmental Regulations/Environmental Projects
  - Mercury and Air Toxics Standard (MATS)
  - NPDES Water Discharge Permits

- Future Environmental Regulations
  - Coal Combustion Residuals (CCR)
  - 316(b) – Cooling water intake structures
  - Clean Power Plan (Greenhouse Gas (GHG) Rule)
  - National Ambient Air Quality Standards (NAAQS)
  - Cross State Air Pollution Rule (CSAPR)

NPDES - National Pollutant Discharge Elimination System

Distributed Generation

- Distributed generation can be difficult to implement on a large scale
- Solar has the best opportunity for growth in the IPL service territory but is currently challenging as a least cost resource
- Actively monitoring trends in Distributed Generation and Distributed Energy Resources

IRP Public Advisory Meeting #2

July 18, 2014 --- Agenda Topics

- Summary of IRP Public Advisory Meeting #1
- Demand Side Management Update
- Environmental Update
- Overview of Stakeholder Comments and Questions
- Incorporating Stakeholder Input
- Presentation of Scenario Results
- Stakeholder Feedback and Comments

Recent DSM Developments

- IPL has made a filing for approval of a DSM Plan for 2015/2016 in Cause No. 44497
- Testimony filed in Cause No. 44441 regarding large customer's ability to opt-out of DSM
- Numerous comments on the IURC General Administrative Order have been made, providing recommendations for future DSM in Indiana

2015-2016 DSM Plan Filed - Cause No. 44497

- Cause No. 44497 seeks Commission approval of a 2 Year Plan (2015-2016); however, a 3 Year Action Plan (2015-2017) was included in the prepared filing
- Petition filed on May 30, 2014
- Plan includes 13 DSM Programs
    - 9 Residential and 4 Business
- Forecast EE Savings approx. 1.12% of sales (total sales before large customer opt-outs)
- Expect to continue collaboration with Citizens Gas

Proposed Clean Power Plan

- EPA's Proposed Clean Power Plan would reduce carbon emissions from the power sector nationwide by 30% by 2030 from 2005 levels

- Compliance with "interim goal" on average over the ten-year period from 2020-2029. Compliance with "final goal" in 2030 and thereafter.

- Impacts will be heavily dependent upon the final rule (expected June 1, 2015) and State Implementation Plans and remain largely uncertain at this time, but may include:
  - Required heat rate improvements
  - Decreased dispatch of coal-fired units
  - Increased dispatch of renewables and existing NGCCs
  - Additional demand side EE measures

Addressing Top Stakeholder Risk Factors

- Cost assumptions for wind turbines
  - Reduced the Ventyx reference case cost assumption for new wind resources by $200/KW to reflect declining costs for wind generation

- Carbon/GHG Assumptions
  - Included in the Ventyx environmental scenario
  - Will incorporate the “EPA Clean Power Plan” into the IPL base case scenario

Addressing Top Stakeholder Risk Factors

- DSM/EE
  - Incorporate updated projections from Applied Energy Group analysis
  - Provide transparency on cost/benefit analysis evaluated on a consistent basis with supply-side options
  - Ventyx Model is not the best tool for DSM cost/benefit analysis
- Distributed Generation Impact
  - Will reduce energy forecast to reflect increasing level of customer dis gen (e.g. 2% by 2020, 4% by 2030)

Conclusions from IPL's Initial Modeling

- IPL does not have a need for new capacity resources for the next 15 years
  - Refuel HS units in 2015/2016
  - Eagle Valley CCGT in 2017
  - Low load growth + DSM/EE
  - Subject to change if NPDES evaluation indicates earlier retirement of big 5 coal units
- Combined cycle is a preferred capacity resource addition in all scenarios
- Wind is added in the environmental and high gas scenarios

IPL's Feedback Response Tables

	May 16, 2014 IRP Meeting	July 18, 2014 IRP Meeting
Number of Comments and Questions Received	112	29
Date IPL's Response Was Posted on IRP Webpage	June 20, 2014	August 15, 2014

- IPL responded to all stakeholder comments and questions received
- The Feedback Response Tables are posted on the IPL IRP webpage (https://www.iplpower.com/IRP/)

Stakeholder Comments and Questions from IPL's July 18th IRP Public Advisory Meeting

Feedback topics included:

- DSM 2018-2034 Forecast
- Future Environmental Cost Estimates
- Clean Power Plan Evaluation
- NPDES Analysis Results
- Wind Congestion Assumptions
- Flexible Retirement Dates within the Model

Questions?

START OF NEW MATERIAL

NPDES Analysis

Presented by Tate Ayers, Director Corporate Planning and Analysis

IPL Maintains NPDES Permits on Each of its Power Plants

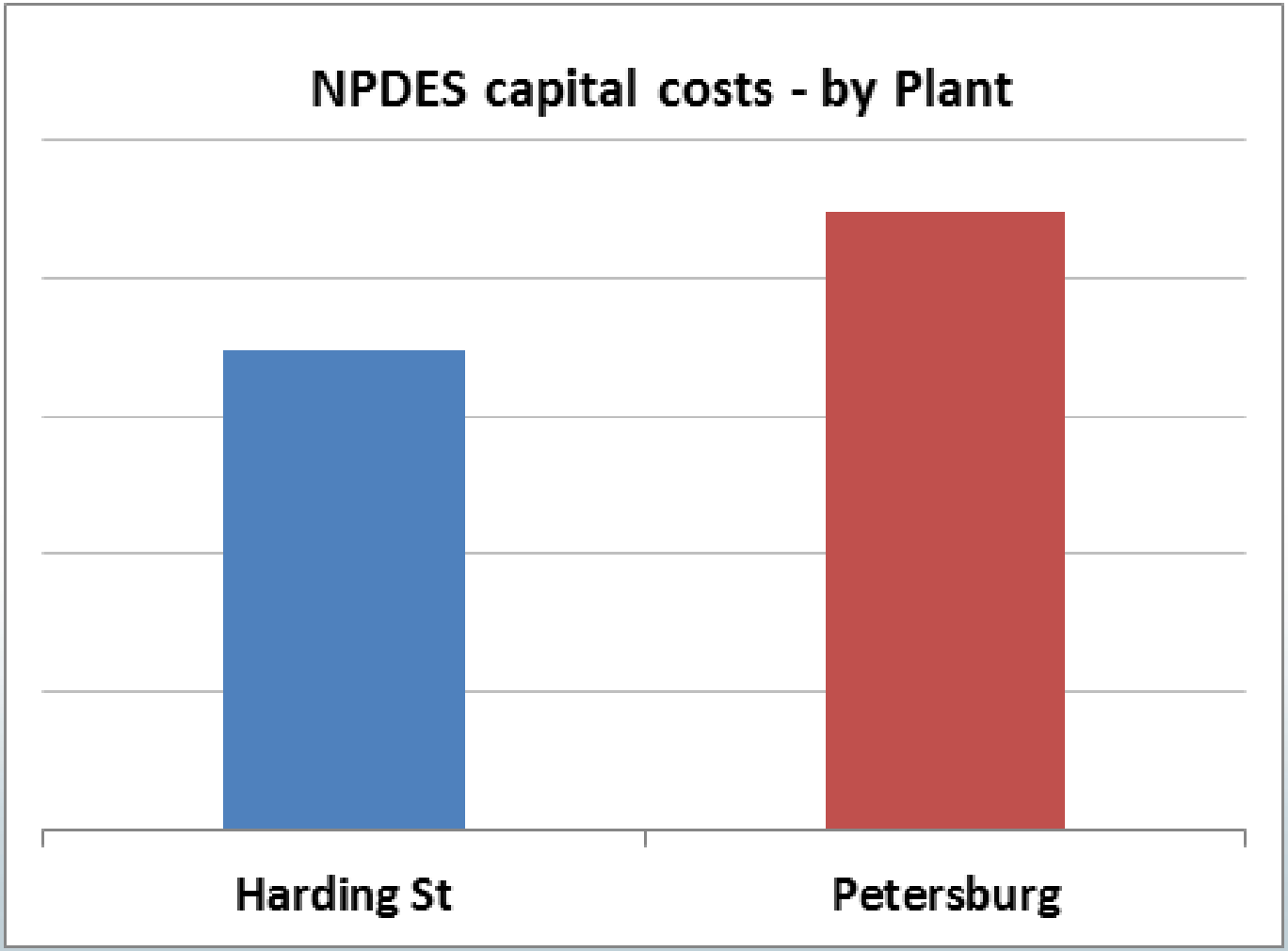
- The NPDES permits require compliance with the following:
  - Technology based and water quality based effluent limitations
  - Monitoring and reporting requirements
- On August 28, 2012, the IDEM issued NPDES permit renewals to IPL's Petersburg and Harding Street generating plants
  - The permit includes new technology based and water quality based effluent limitations
  - These new limitations and requirements drive the need for additional wastewater treatment technologies
  - Compliance due by September 2017

NPDES - National Pollutant Discharge Elimination System
IDEM- Indiana Department of Environmental Management
CWA – Clean Water Act

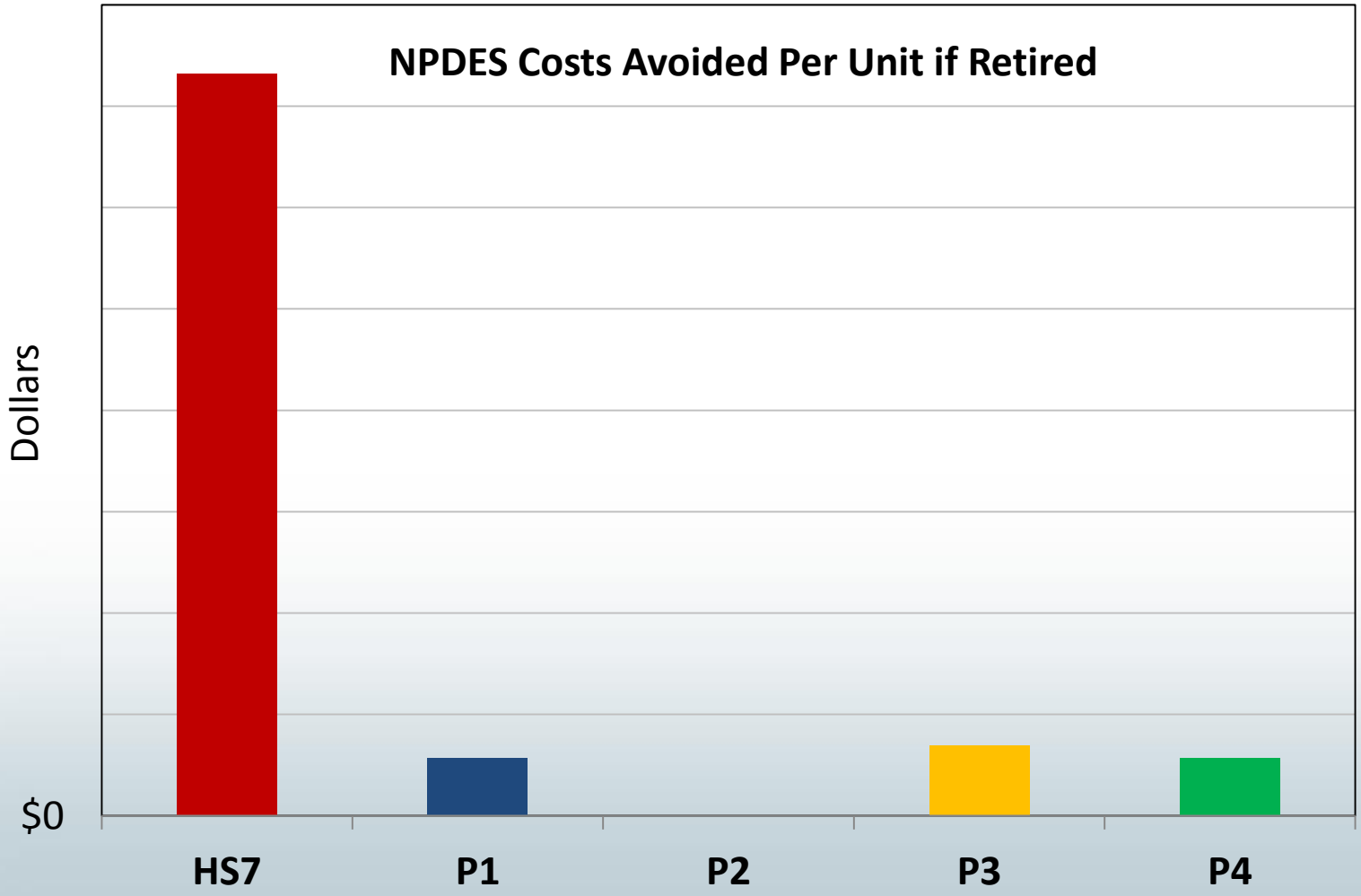
NPDES Analysis

- Performed for IPL Coal units: HS 7 and Petersburg 1-4
- Full life-cycle evaluation to capture impact of potential future risks
  - Multiple composite risk-scenarios were used to perform decision-tree analysis
  - Probabilities and costs applied to risks to derive an overall ‘expected’ revenue-requirement
  - Simple payback assessment
- Evaluated against alternative resource-options

Petersburg Plant Costs Compared to Harding St Plant Costs with HS 7 on Coal



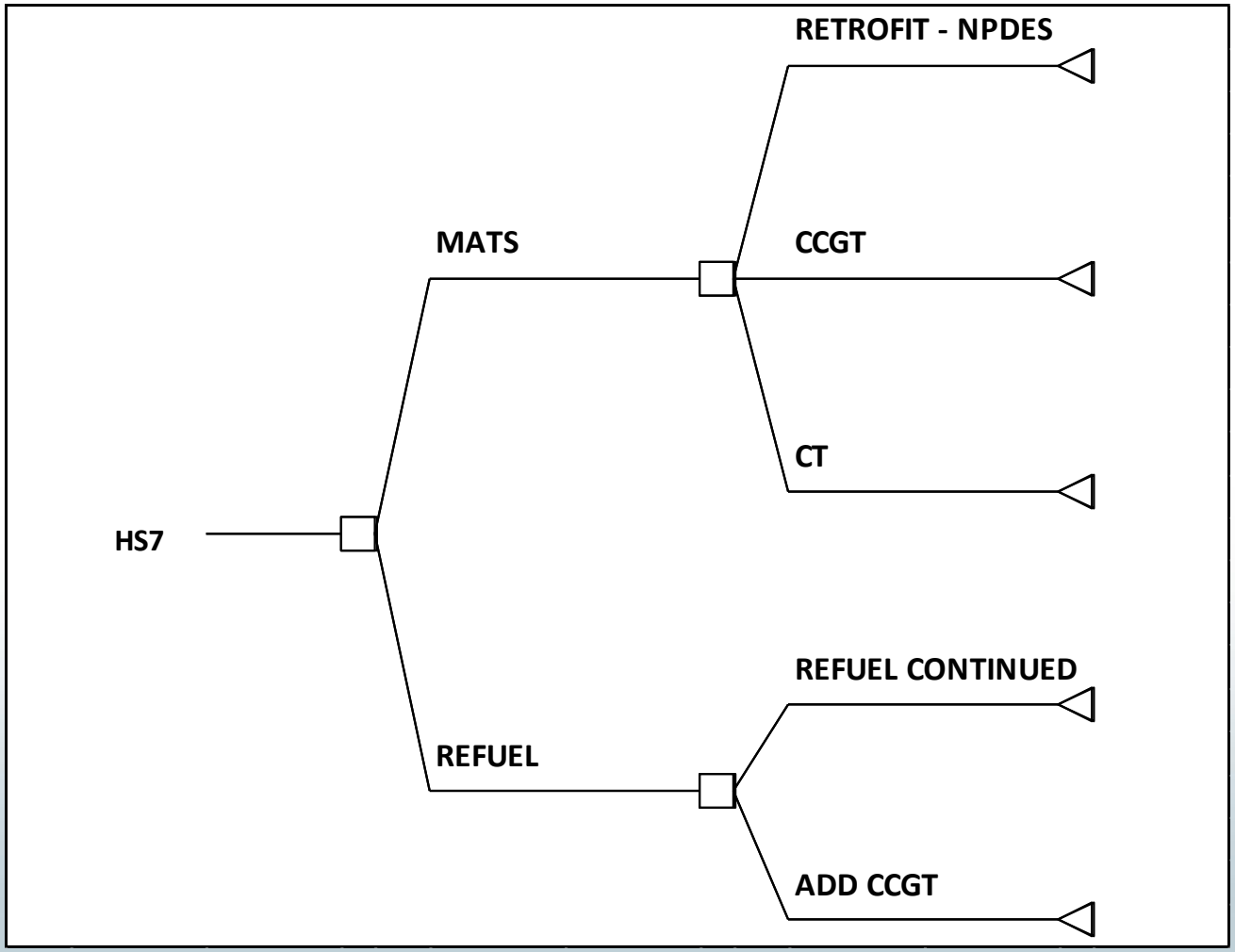
IPL Coal Unit Incremental Capital Costs



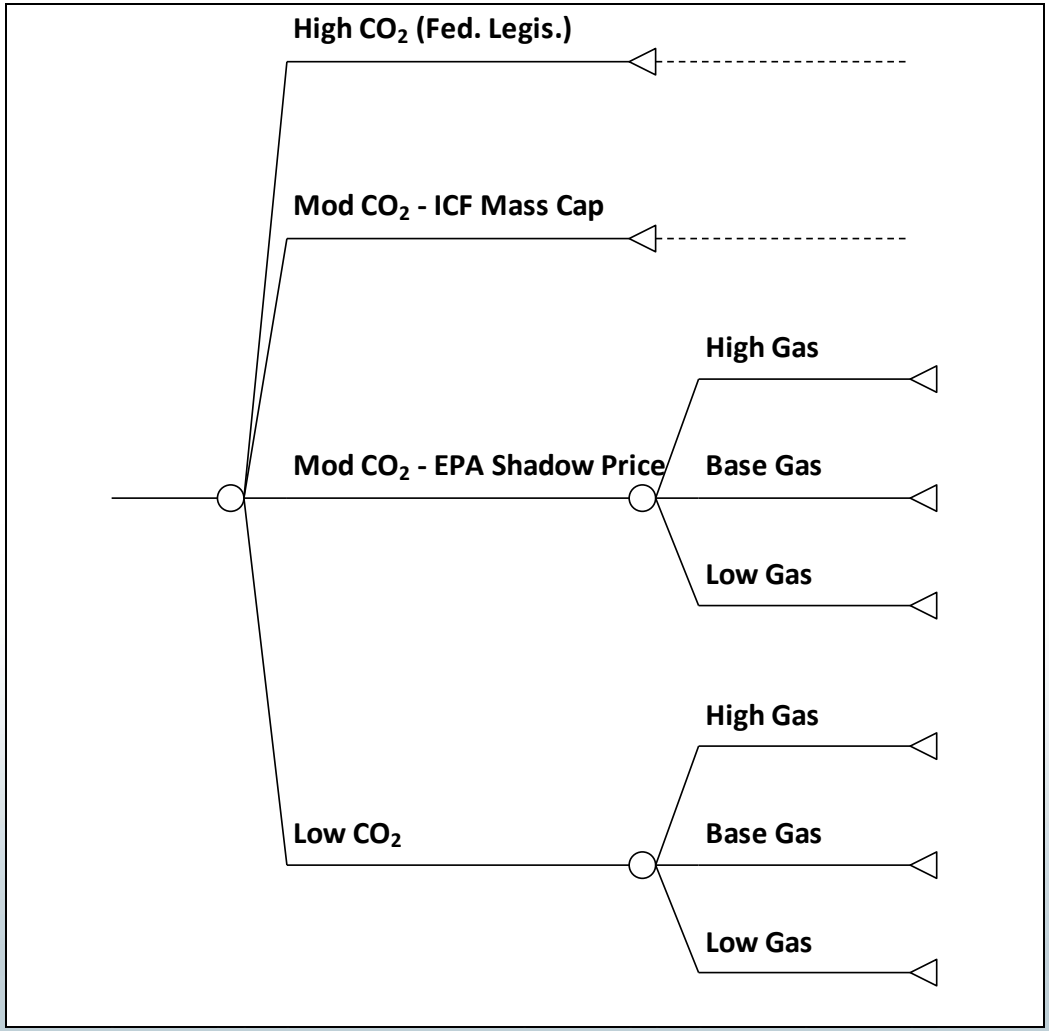
Future Risks Considered

- Natural Gas prices
- GHG/CO_2 requirements
  - Clean Power Plan
  - Federal Legislation
- Other Environmental regulations including:
  - Coal Combustion Residuals (CCR)
  - 316(b) – Cooling water intake structures
  - National Ambient Air Quality Standards (NAAQS)
- Reliability (HS7)

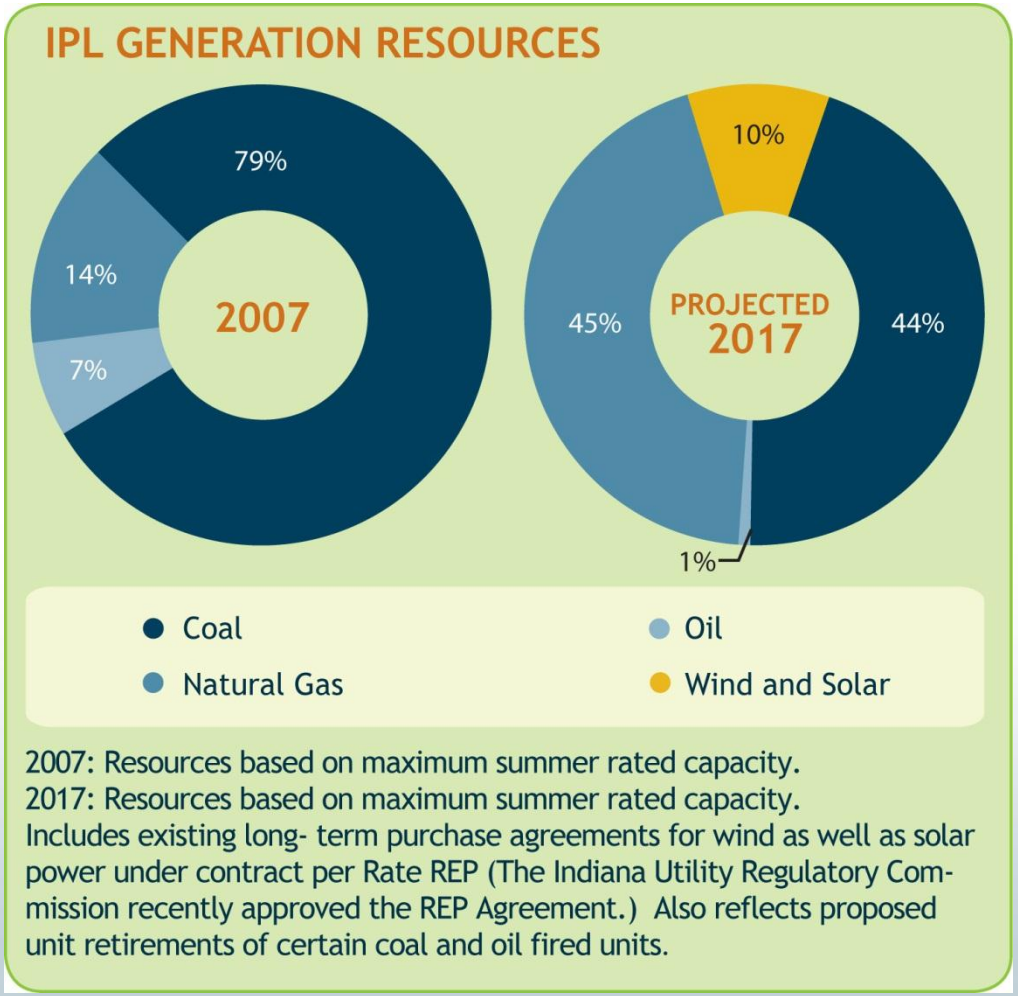
HS7 Decision Tree Resource Options



Decision Tree – CO2 and Natural Gas Risk Scenarios



Converting Harding Street Unit 7 to Natural Gas is the Reasonable Least Cost Plan



IPL modeled HS 7 as a natural gas unit in the IRP and as shown here in the 2017 projection

Questions?

Updated Modeling Assumptions and Inputs

Presented by:
Joan Soller, Director of Resource Planning
Dave Costenaro, Applied Energy Group
John Haselden, Principal Engineer, Regulatory Affairs
Lake Hainz, Resource Planning Analyst
Angelique Oliger, Director of Environmental Policy

Additional Modeling Adjustments to Incorporate New Information and Stakeholder Feedback

1. DSM Forecast was developed for the full 20-year planning period
   - Developed and presented today by AEG
2. Load sensitivities were included (high/low/base)
3. IPL modeled a sensitivity for wind
4. IPL estimated possible future environmental cost ranges
5. Possible environmental effects of the Clean Power Plan were included in most scenarios through CO_2 costs
6. Modeled economic generation retirements vs full planning life

Indianapolis Power & Light
DSM Potential Forecast

Prepared for IRP Stakeholder Meeting

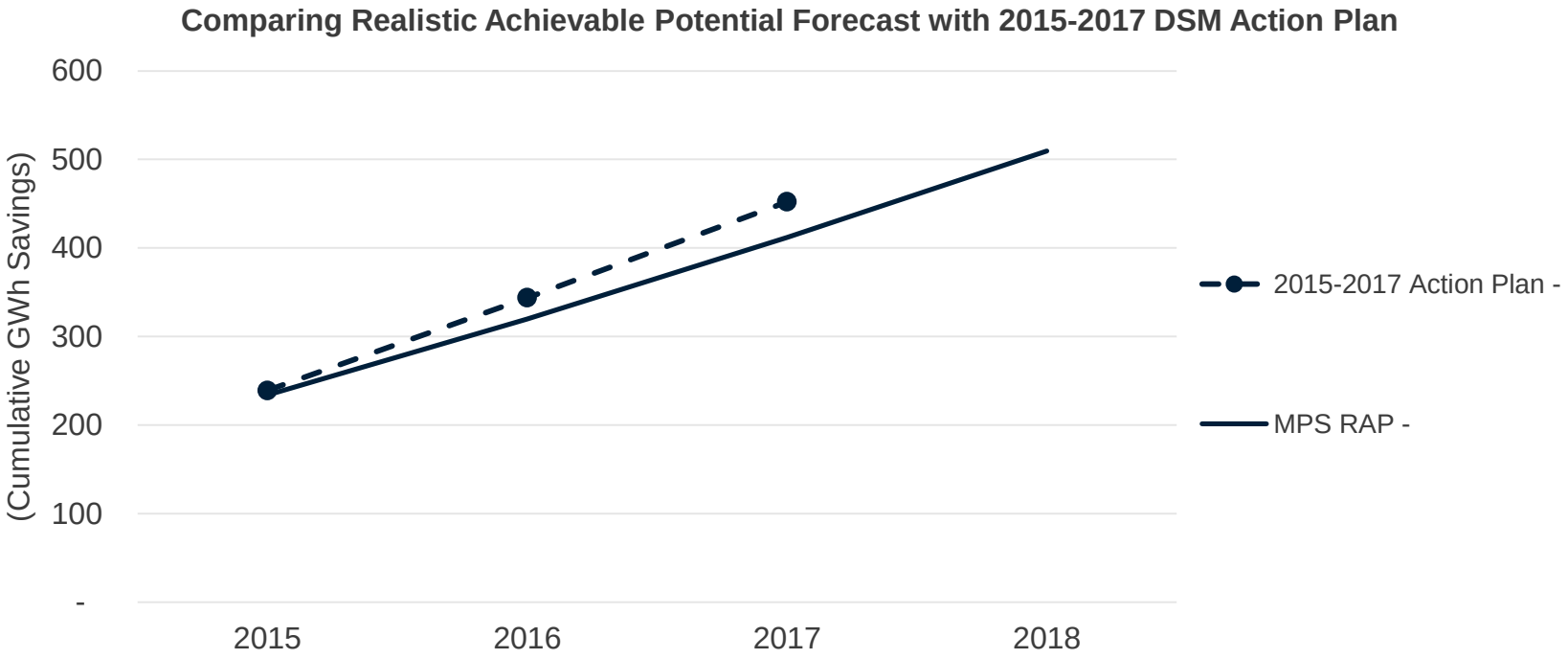
Forecasting DSM Potential for IPL

- Began with AEG's LoadMAP Model from 2012 DSM Potential Study* and made the following updates:
  1. Refined base year energy use based on improved IPL customer data
  2. Calibrated kWh sales to match 2012 and 2013 actual sales
  3. Updated forecast variables such as avoided costs and discount rates
  4. Aligned measure mix to Filed IPL 2015-2017 DSM Action Plan (added Residential Peer Comparison Program, Residential & Business AC Management Programs)
  5. Updated measure & baseline assumptions for LED lamps, TVs, and Set-top boxes
  6. Tuned market adoption rates, impacts, and budget to align with Filed IPL 2015-2017 DSM Action Plan

** "Energy Efficiency Market Potential Study and Action Plan" dated December 21, 2012 was completed by EnerNOC Utility Solutions Consulting Group, which has since been acquired by Applied Energy Group. The same core team members completed the analysis in both the previous and present work.*

Forecasting DSM Potential for IPL

- DSM Potential Forecasts are a close match to the Action Plan. We then project trends into the future, to 2024 (last year of previous MPS) and beyond to 2034 (timeframe required to support current IRP).



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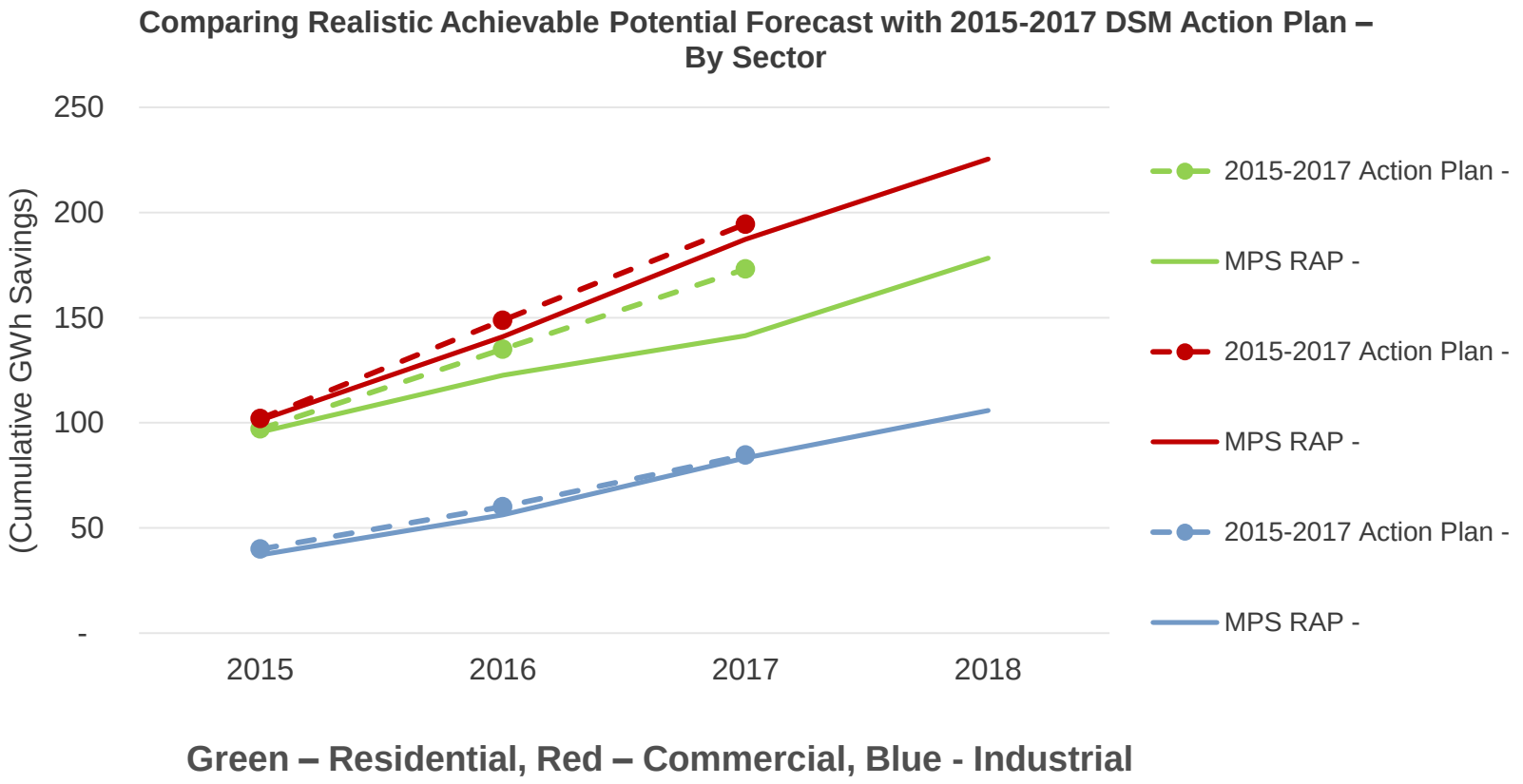
Forecasting DSM Potential for IPL

- Customer segment breakdown of the DSM Potential Forecasts are a close match to the Action Plan.



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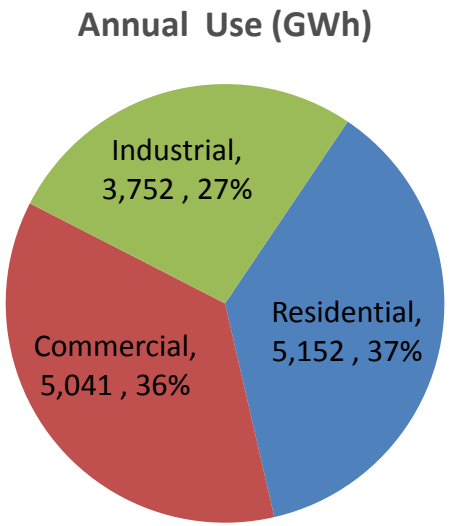
Overall Market Characterization

All Sectors in 2011 (Base Year)

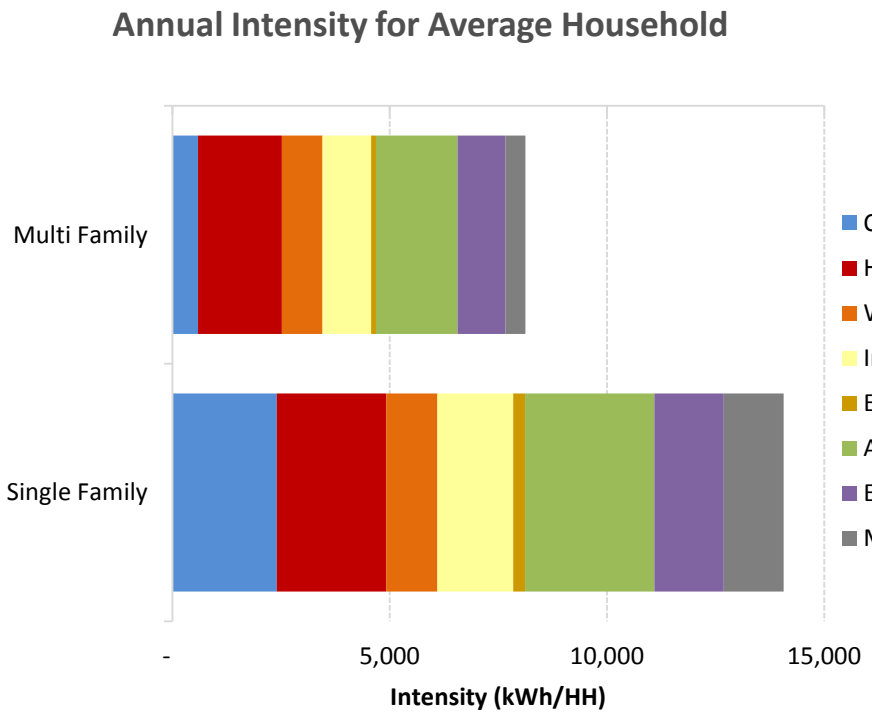
Segment	Annual Use (GWh)	% of Sales
Residential	5,152	37%
Commercial	5,041	36%
Industrial	3,752	27%
Total	**13,946**	**100%**

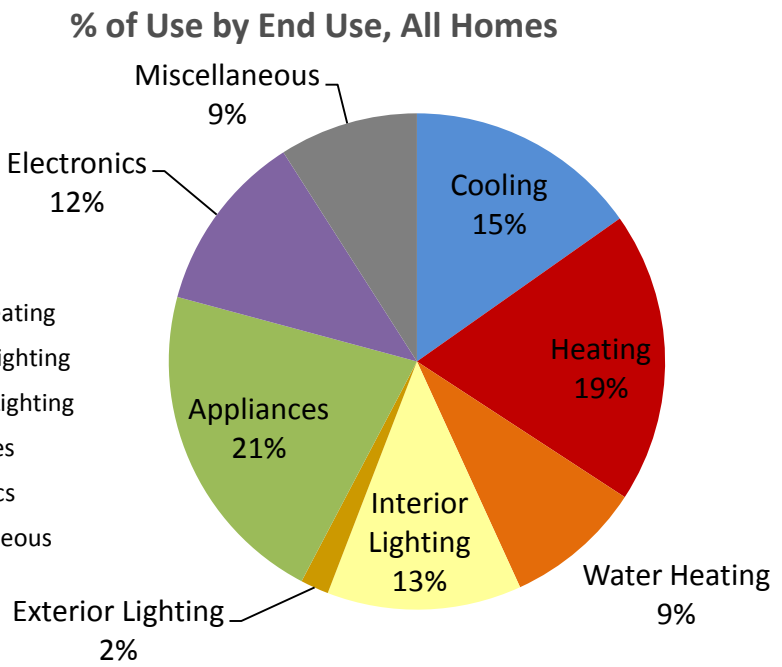


- Relative to the 2012 MPS, the split between commercial and industrial usage has shifted.
- Estimated 27% commercial and 36% industrial usage in 2012 MPS based on regional averages and investigation of IPL's top 30 customers
- Updates to NAICS codes in the IPL billing system refined this split to be the opposite: 36% commercial and 27% industrial.
- The residential control totals were not affected.

Residential Market Profile, 2011

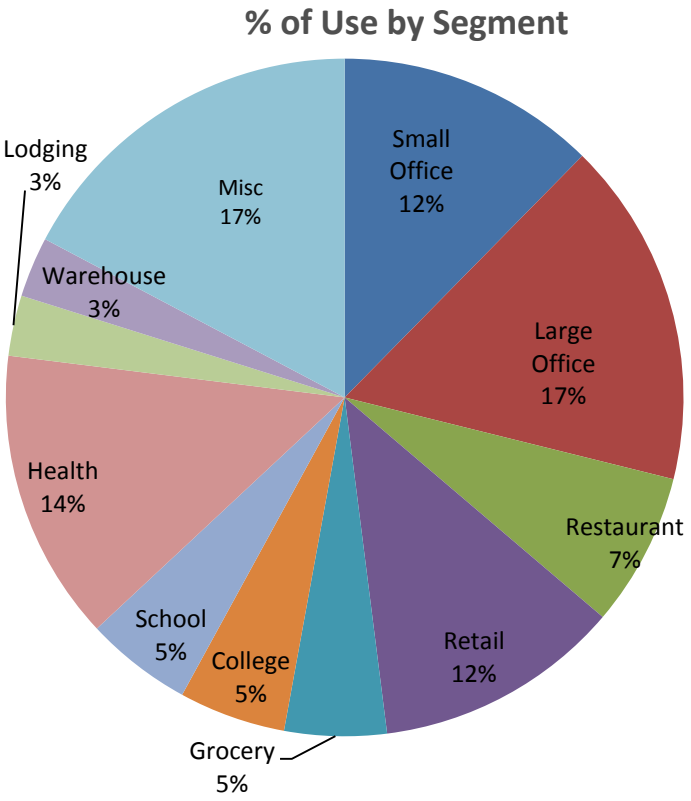
Segment	Households	Intensity (kWh/HH)	2011 Electricity Use (GWh)
Single Family	298,461	14,071	4,200
Multi Family	117,307	8,120	952
Total	**415,768**	**12,392**	**5,152**





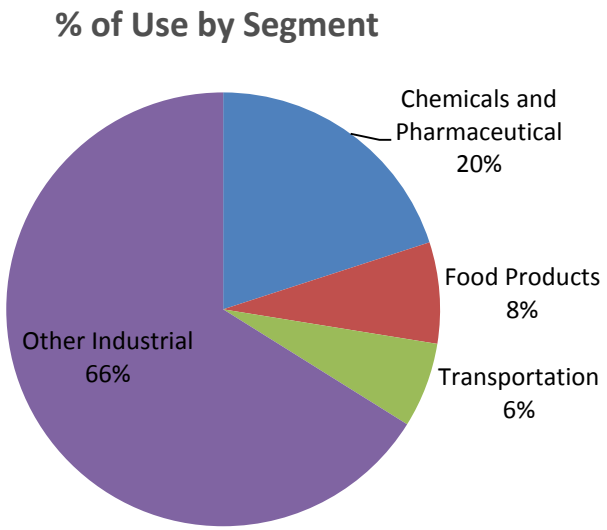
Commercial Market Profile, 2011

Segment	Floor Space (1,000 Sq.Ft.)	2011 Electricity Use (1,000 MWh)	Summer Peak Demand (MW)
Small Office	41,023	624	186
Large Office	46,263	832	125
Restaurant	9,571	370	63
Retail	42,648	594	135
Grocery	5,023	245	88
College	22,259	257	61
School	31,959	257	67
Health	28,537	701	106
Lodging	10,609	145	21
Warehouse	22,553	145	49
Miscellaneous	114,106	870	193
Total	**374,553**	**5,041**	**1,094**

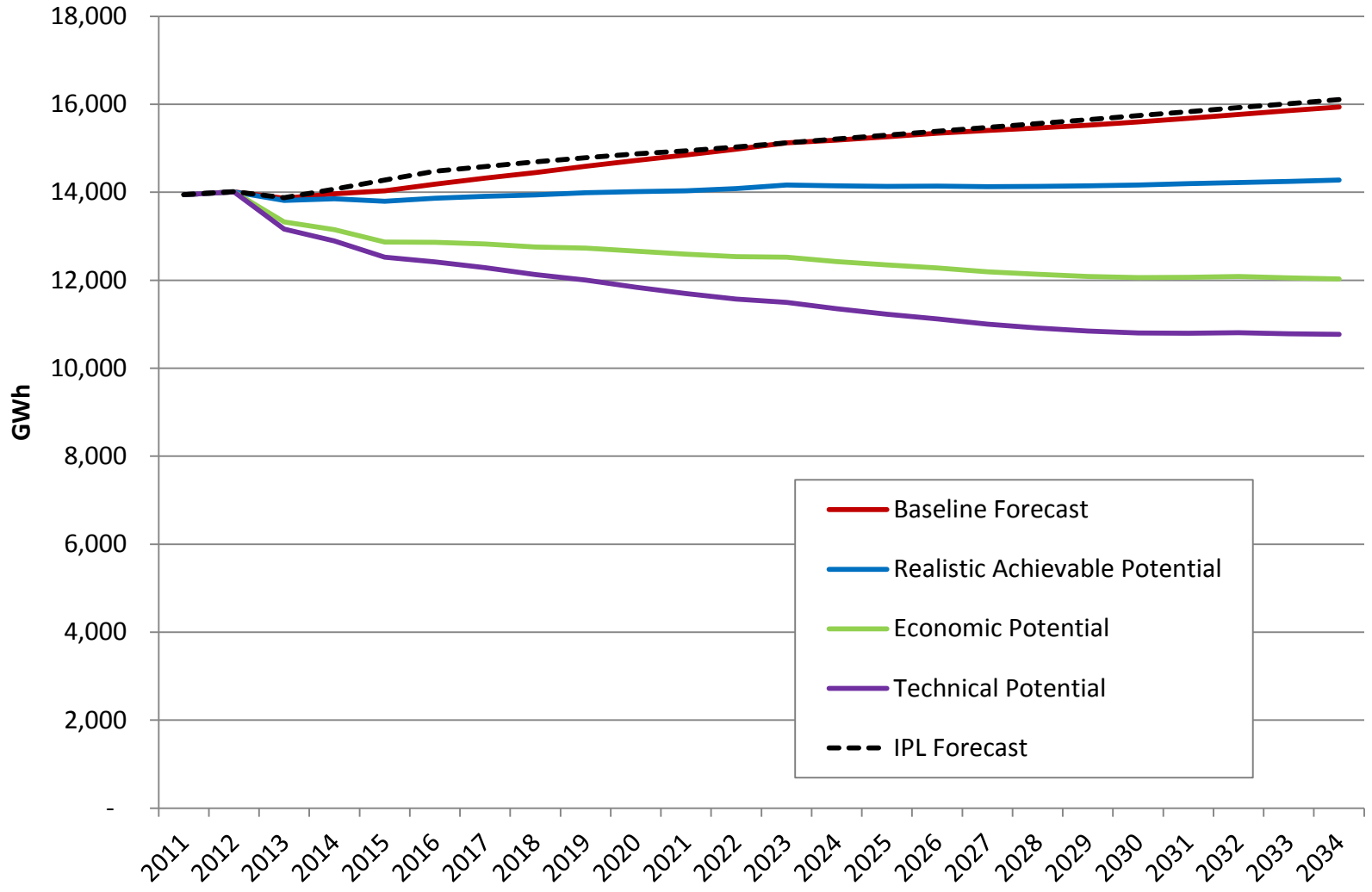


Industrial Market Profile, 2011

Segment	Number of Employees	2011 Electricity Use (GWh)	Summer Peak Demand (MW)
Chemicals and Pharmaceutical	3,079	751	100
Food Products	3,592	283	38
Transportation	4,054	238	46
Other Industrial	90,634	2,481	540
Total	**101,358**	**3,752**	**724**

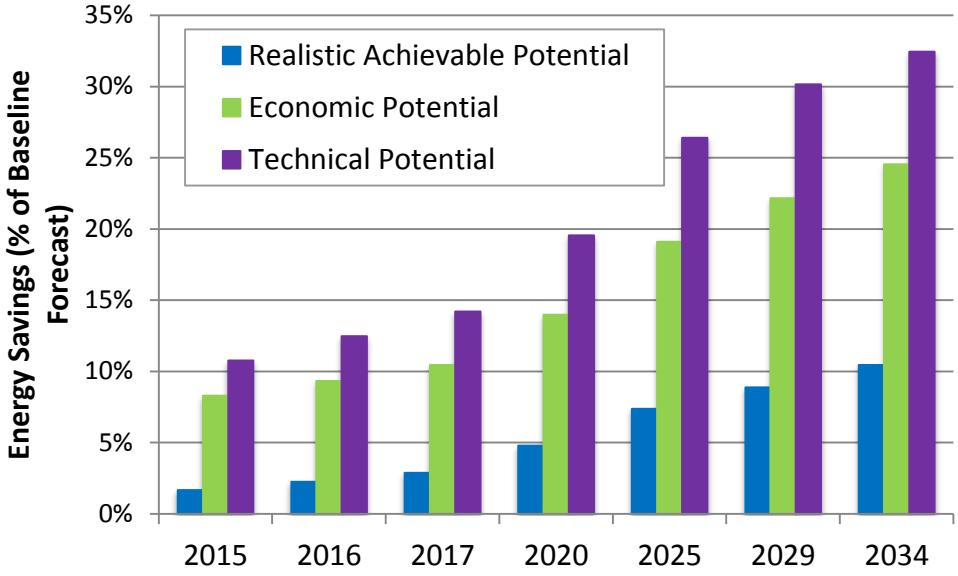


Impact of DSM Potential on Load Forecast



Overall DSM Potential (Energy)

For 2015 to 2034, 20-year Realistic Achievable Potential savings are 10.4% of the baseline forecast. This is 1,665 net* GWh.

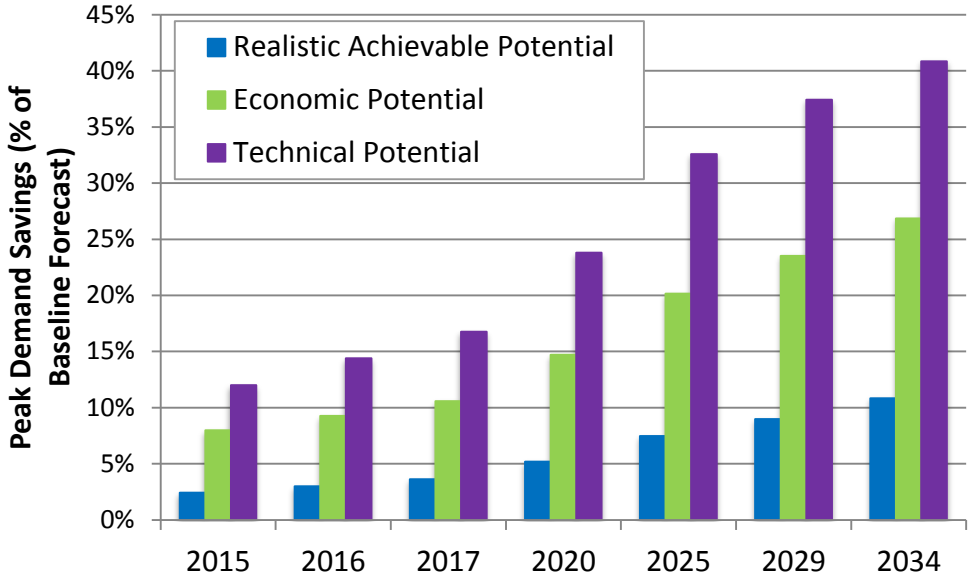


	2015	2016	2017	2020	2025	2029	2034
Baseline Forecast (GWh)	14,033	14,186	14,319	14,722	15,260	15,526	15,940
Net Cumulative Savings (GWh)							
Realistic Achievable Potential	234	320	412	706	1,125	1,378	1,665
Economic Potential	1,163	1,323	1,495	2,057	2,914	3,438	3,911
Technical Potential	1,509	1,770	2,034	2,877	4,030	4,681	5,172
Net Energy Savings (% of Baseline)							
Realistic Achievable Potential	1.7%	2.3%	2.9%	4.8%	7.4%	8.9%	10.4%
Economic Potential	8.3%	9.3%	10.4%	14.0%	19.1%	22.1%	24.5%
Technical Potential	10.8%	12.5%	14.2%	19.5%	26.4%	30.2%	32.4%

**All savings, unless otherwise noted, are provided as net values rather than gross, because LoadMAP uses a baseline forecast that includes naturally occurring EE.*

Overall DSM Potential (Peak Demand)

For 2015 to 2034, 20-year Realistic Achievable Potential savings are 10.8% of the baseline forecast. This is 396 net* MW.

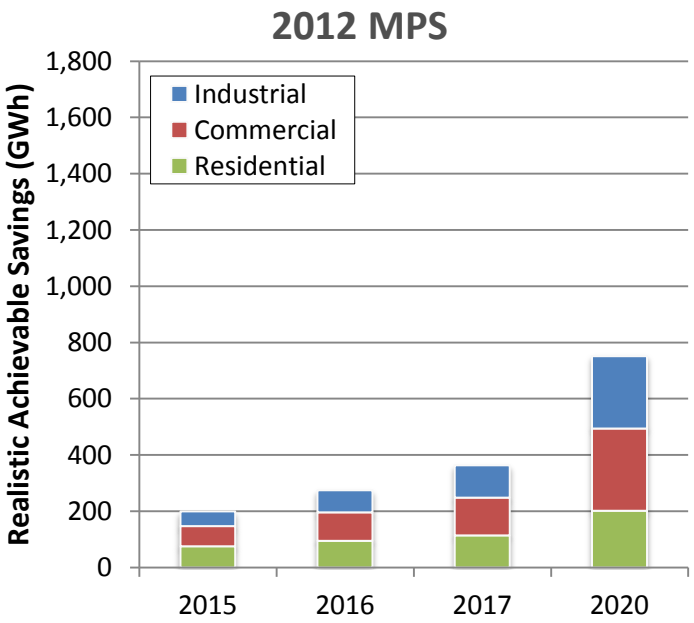


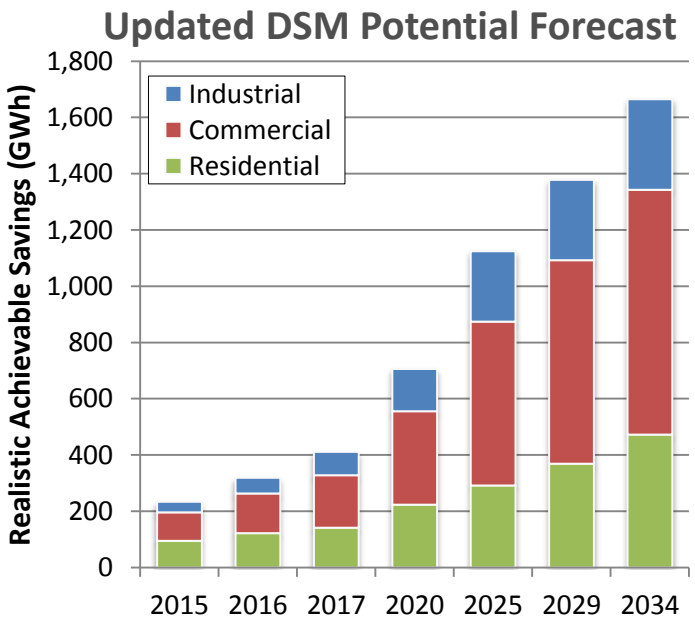
	2015	2016	2017	2020	2025	2029	2034
Baseline Forecast (MW)	3,181	3,225	3,265	3,383	3,535	3,586	3,662
Net Cumulative Savings (MW)							
Realistic Achievable Potential	76	96	117	175	263	322	396
Economic Potential	254	298	345	497	712	843	983
Technical Potential	381	464	547	805	1,152	1,342	1,495
Net Energy Savings (% of Baseline)							
Realistic Achievable Potential	2.4%	3.0%	3.6%	5.2%	7.5%	9.0%	10.8%
Economic Potential	8.0%	9.2%	10.6%	14.7%	20.1%	23.5%	26.8%
Technical Potential	12.0%	14.4%	16.8%	23.8%	32.6%	37.4%	40.8%

**All savings, unless otherwise noted, are provided as net values rather than gross, because LoadMAP uses a baseline forecast that includes naturally occurring EE.*

2012 MPS vs Updated Potential Forecast (by sector)

Allocation of cumulative achievable potential over time





	2015	2016	2017	2020
RAP Savings (GWh)				
Residential	75.5	95.7	114.8	202.5
Commercial	71.8	100.2	133.7	292.6
Industrial	52.4	79.4	115.5	256.6
Total	**199.7**	**275.3**	**364.0**	**751.7**

	2015	2016	2017	2020	2025	2029	2034
RAP Savings (GWh)							
Residential	95.5	122.6	141.3	223.2	291.7	368.9	472.5
Commercial	101.2	140.9	187.3	333.1	582.5	724.0	870.4
Industrial	37.2	56.3	83.2	149.8	250.5	285.2	322.0
Total	**234.0**	**319.8**	**411.9**	**706.2**	**1,124.8**	**1,378.1**	**1,664.9**

- In 2020, Updated forecast of 706 GWh is slightly lower than previous study at 751 GWh
- Updated potential includes the estimated effects of C&I customers opting out of DSM programs, based on current levels of opt-out. 2012 MPS does not.

Thank You!

David M Costenaro
Senior Project Manager
dcostenaro@appliedenergygroup.com

IPL's View on AEG's 20 Year DSM Forecast

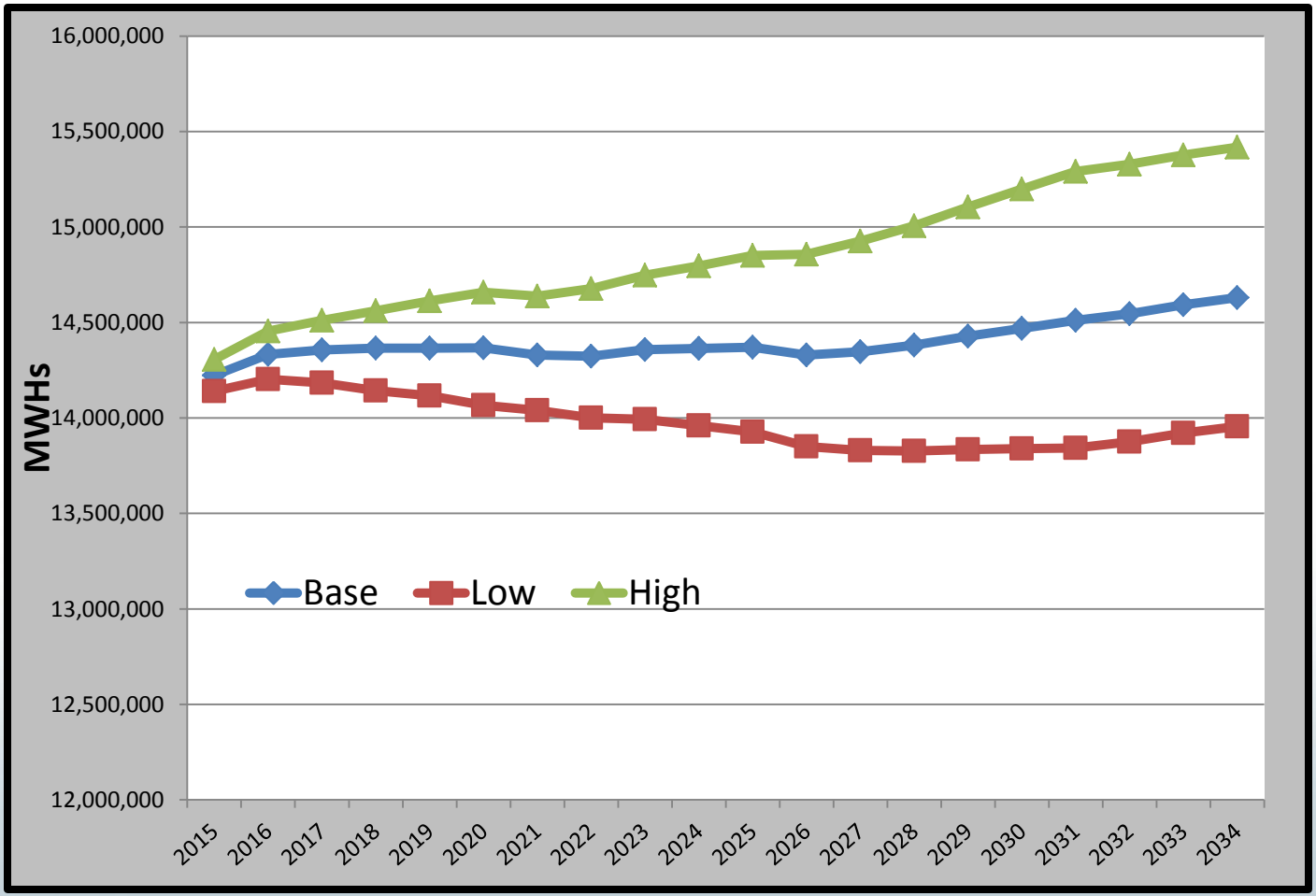
- AEG's forecast represents the market potential from a 2014 viewpoint
- IPL's future DSM filings and results will likely vary from the forecast
  - Legislation and public policy will help shape future DSM
  - Customer behavior including additional large customer opt-outs will affect outcomes
  - Programs were included in the forecast based on a Total Resource Cost (TRC) threshold result of 1 or greater, while IPL's DSM portfolio offerings typically have an aggregate TRC value greater than 1

IPL has Created its High, Low, and Base Load Forecasts

- AEG's Realistic Potential DSM Savings Forecast was deducted from the Gross Internal Demand ("GID") to establish the Base Forecast
- High and Low Forecast were developed using range from IPL-specific State Utility Forecasting Group ("SUFG") forecast
- Range reflects uncertainty stemming from the following factors:

Factors Causing Potential Variance
Economic Activity
Changes in Technology
Consumer Behavioral Changes
State and Federal Energy Policies

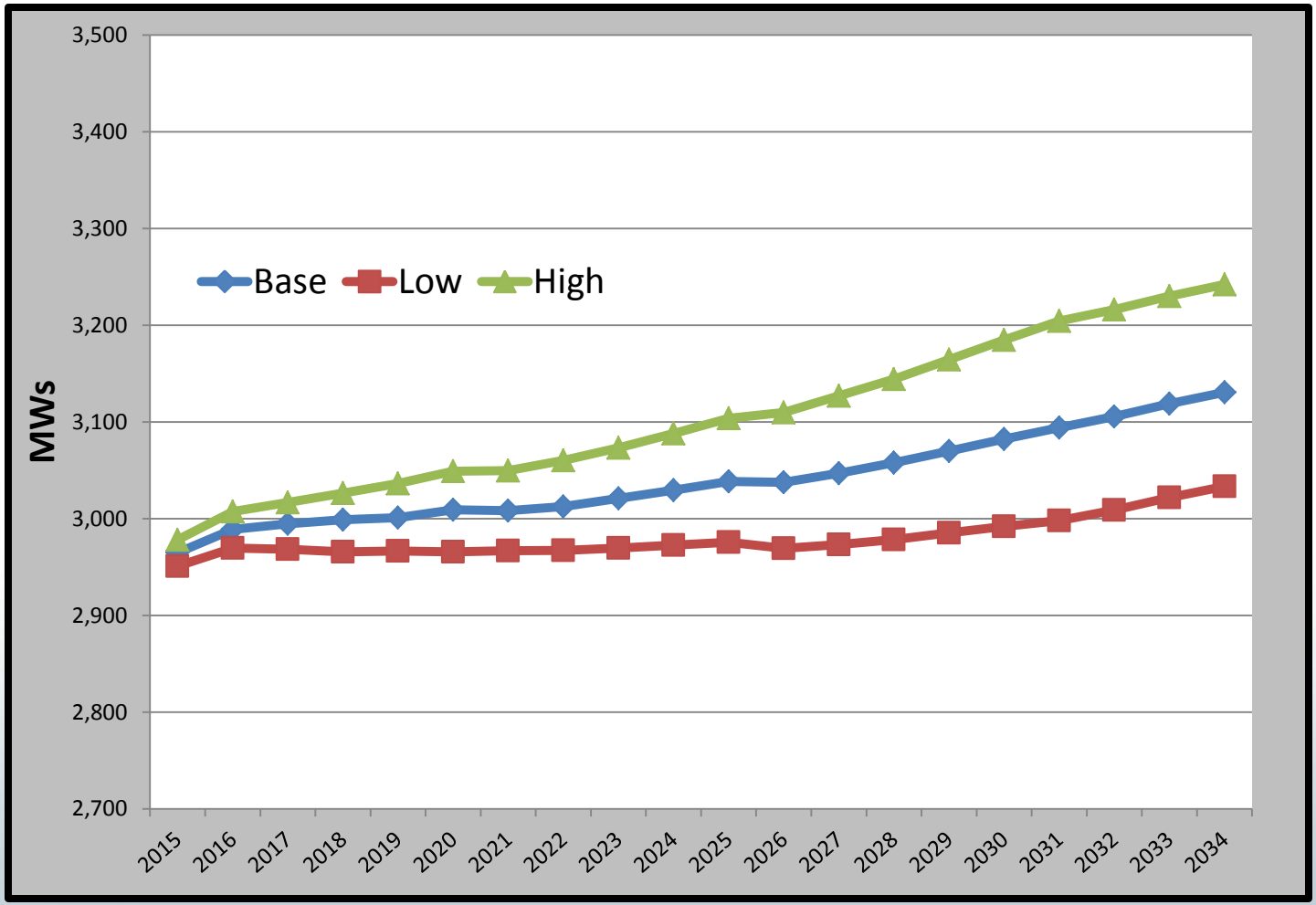
Energy Forecast (Net of DSM)



Average **Energy** Growth Rates (2015-2034):

- Base: 0.1%
- Low : -0.1%
- High: 0.4%

Peak Forecast (Net of DSM)



Average **Peak** Growth Rates (2015-2034):

- Base: 0.3%
- Low : 0.1%
- High: 0.4%

IPL has Modeled a Sensitivity for Wind

- New Wind Resources are modeled using a 35% Capacity Factor and Locational Marginal Price (LMP) equivalent to MISO-IN Market Prices

- Sensitivities focus on applying present characteristics of wind along with potential wind improvements to new wind resources

    - Current Transmission Congestion Characteristics
        1. Market price differences
        2. Current Capacity Factors(≈25%)

    - Potential Improvements
        3. Pair with batteries to relieve transmission congestion
        4. 50% Capacity Factor

IPL has Estimated Possible Future Environmental Compliance Costs

- The potential Rules in the table below could possibly require IPL to incur additional expenses for compliance

Potential Rule	Earliest Expected Compliance Date	Preliminary Estimated Capital	Preliminary Estimated Annual O&M
CSAPR	January 2015	$0	$0
CCR*	Late 2019	$21M-$30M	$3M-$35M
CWA 316(b)	2020	$6M-$154M	$0M-$6M
ELG	2018	$0M-$43M	$0M-$1M
GHG	2020	TBD	TBD
NAAQS	2017	$27M-$174M	$13M-$15M

*Includes estimated pond closure costs.

Please see slide 12 for potential Rule explanations.

IPL has Evaluated Potential Impacts of Greenhouse Gas Requirements

- Five (5) scenarios include the EPA's shadow price for CO_2 starting in 2020
- The environmental scenario includes ICF's Mass Cap CO_2 price starting in 2020
- The high environmental scenario is based on federal legislation modeled after Waxman-Markey in Ventyx's Fall 2013 CO_2 price starting in 2025
- The low environmental scenario does not include a CO_2 price

Questions?

Presentation of Scenario Results

Presented by Joan Soller, Director of Resource Planning and Swetha Sundar, Resource Planning Analyst

Supply and Demand Resource Alternatives - Costs & Performance Attributes

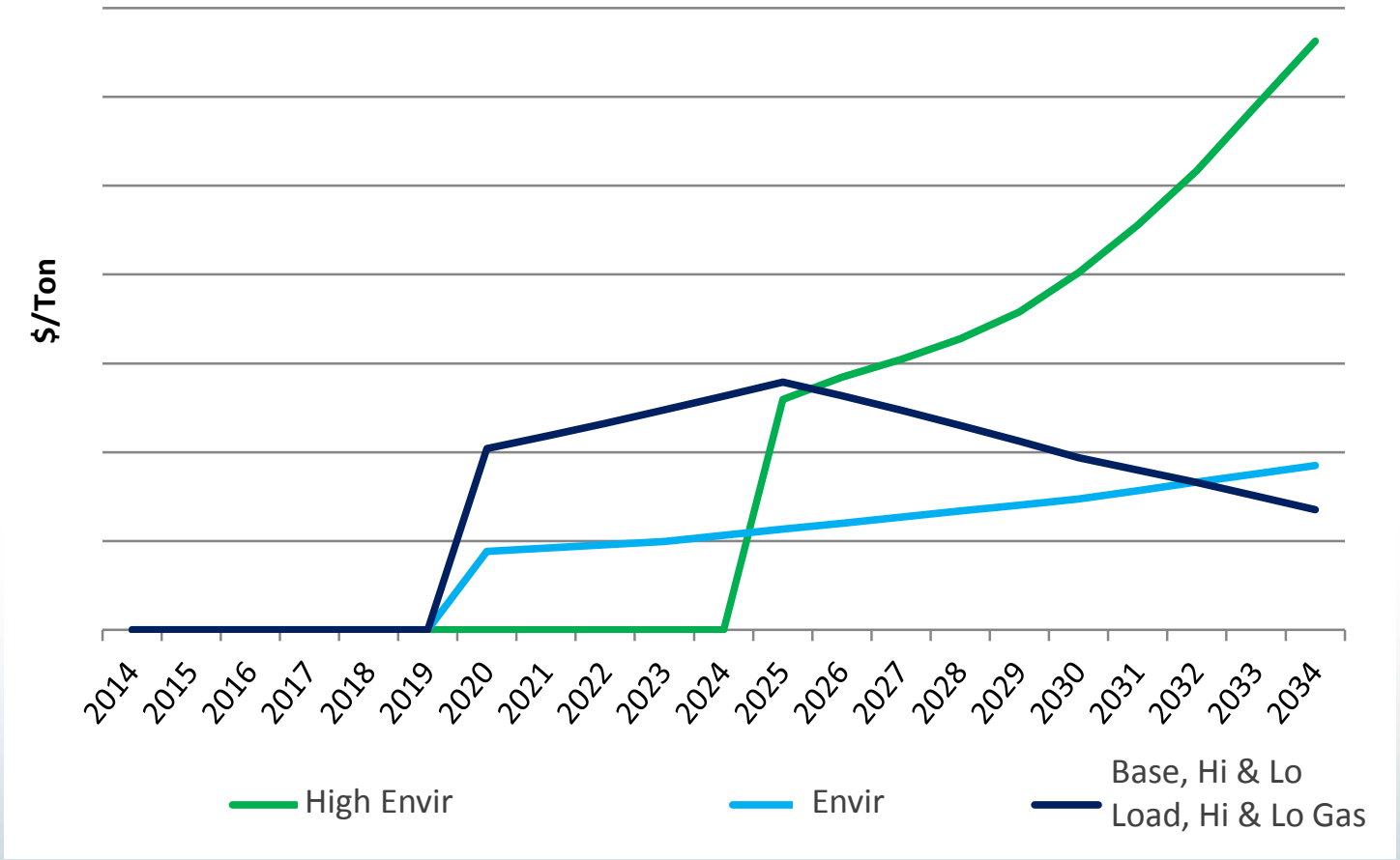
IRP Resource Technology Options			
	MW Capacity	Performance Attributes	Representative Cost per Installed KW*
Simple Cycle Gas Turbine	160	Peaker	$676
Combined Cycle Gas Turbine - H-Class	200	Base	$1,023
Nuclear	200	Base	$5,530
Wind	50	Intermittent	$2,213
Solar	10	Intermittent	$3,873
Demand Response/Interruptibles	62	Peak Use	Varies by Program
Smart Grid - Conservation Voltage Reduction	20	Peak Use	Field assets are in place for this capacity

*These costs from EIA Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants Report (published April 2013) are shared as proxies for IPL's confidential costs.
http://www.eia.gov/forecasts/capitalcost/pdf/updated_capcost.pdf

IPL's Eight IRP Scenarios

Scenario No	Scenario Name	Gas/Market Price	CO2 Price	Load Forecast
1	Base	Ventyx Base	IPL-EPA Shadow price starting 2020	Base
2	High Load	Ventyx Base	IPL-EPA Shadow price starting 2020	High
3	Low Load	Ventyx Base	IPL-EPA Shadow price starting 2020	Low
4	High Gas	Ventyx High	IPL-EPA Shadow price starting 2020-	Base
5	Low Gas	Ventyx Low	IPL-EPA Shadow price starting 2020-	Base
6	High Environmental	Ventyx Environmental	Waxman-Markey proxy Ventyx Fall 2013 prices starting 2025	Base
7	Environmental	Ventyx Mass Cap	Mass Cap ICF Prices beginning in 2020	Base
8	Low Environmental	Ventyx Base	None	Base

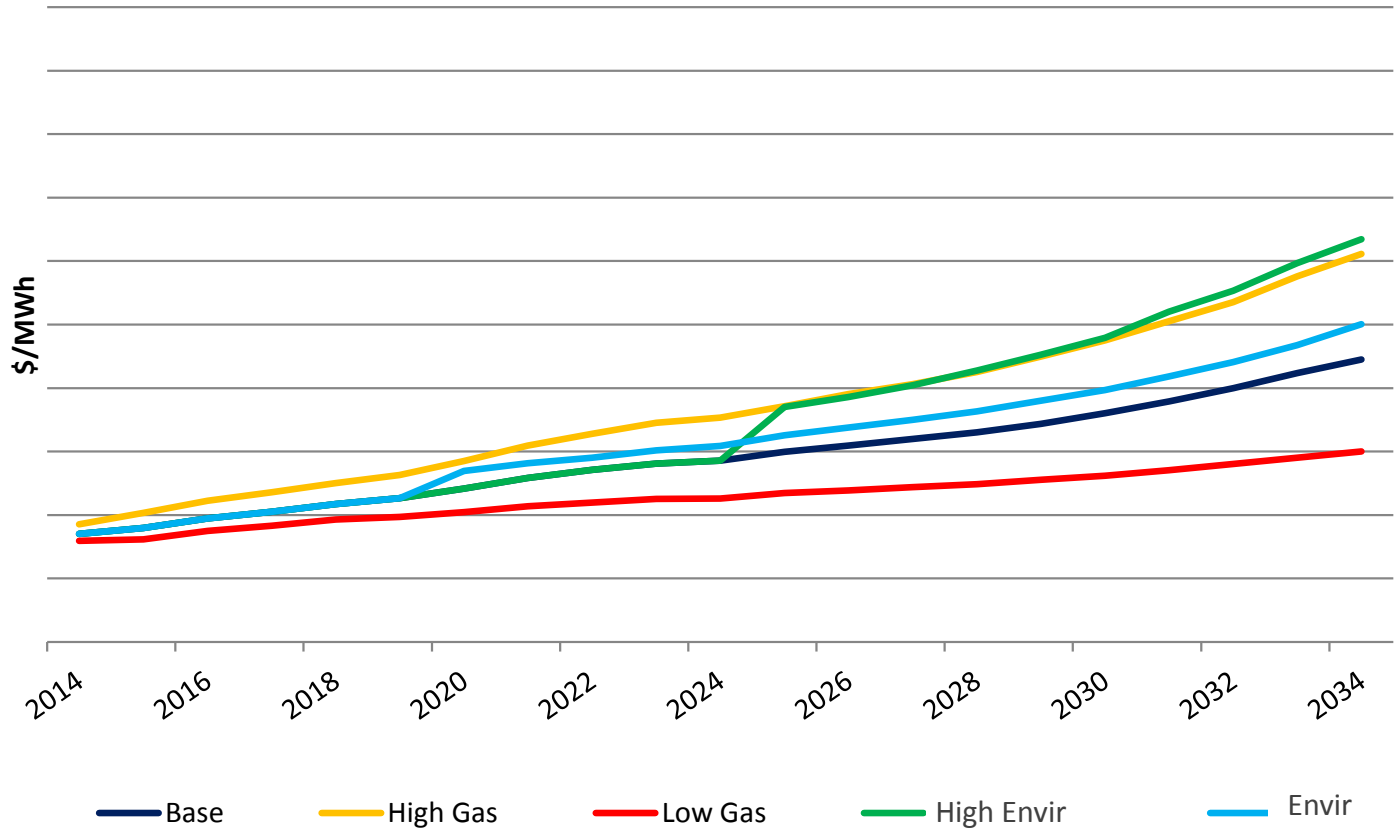
Carbon Prices ($/Ton)



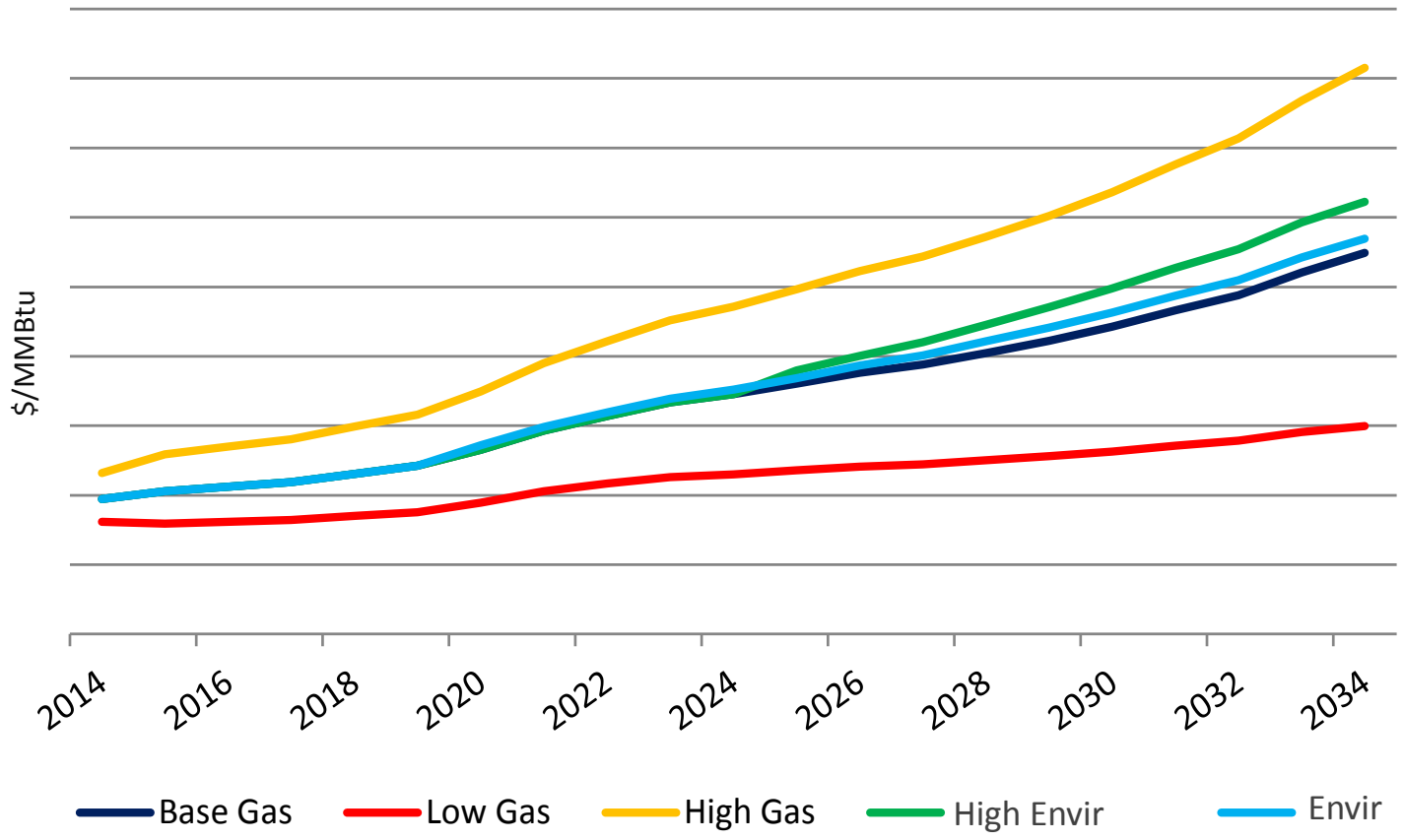
NOTE: These carbon costs are applied differently to the scenarios and not directly comparable. Although, the shape shows the carbon costs' projection.

*Coal Units Only

Annual MISO-Indiana Market Prices (7x24)(Fall 2013 Reference Case/Ventyx Advisors $/MWh)



Henry Hub Annual Gas Price Forecast (Fall 2013 Reference Case/Ventyx Advisors $/MMBtu)



Capacity Expansion Plan Results

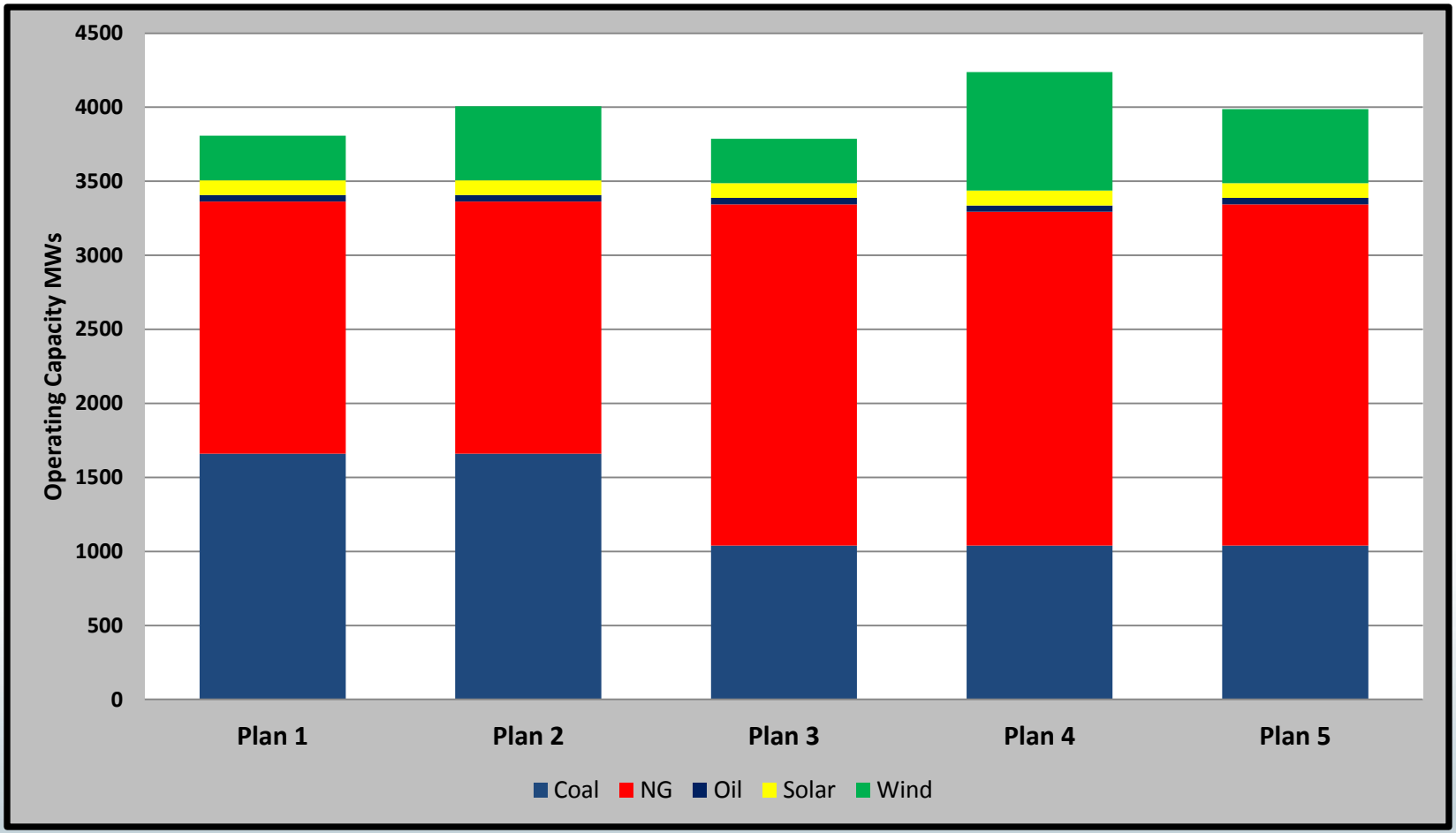
YEAR	Base	High Gas	Low Gas	High Load	Low Load	High Environmental	Environmental	Low Environmental
2015	Market 200 MW	Market 200 MW	Market 200 MW	Market 200 MW	Market 200 MW	Market 200 MW	Market 200 MW	Market 200 MW
2016	Market 450 MW	Market 450 MW	Market 450 MW	Market 500 MW	Market 450 MW	Market 450 MW	Market 450 MW	Market 450 MW
2017 -2019								
2020			Retire Pete 1,2, and 4 CC 200 MW					
2021			CC 800 MW Market 100 MW					
2022			CC 200 MW					
2023								
2024				Market 50 MW		Retire Pete 1		
2025				Market 50 MW		CC 200 MW		
2026				Market 50 MW				
2027				CC 200 MW				
2028						Wind 100 MW		
2029						Wind 150 MW		
2030	Market 50 MW	Wind 100 MW				Wind 100 MW	Market 50 MW	Market 50 MW
2031	Retire HS 5 and 6 CC 200 MW Market 50 MW	Retire HS 5 and 6 CC 200 MW Wind 150 MW	Retire HS 5 and 6 CC 200 MW	Retire HS 5 and 6 CC 200 MW	Retire HS 5 and 6 CC 200 MW	Retire HS 5 and 6 CC 200 MW Market 50 MW Wind 50 MW	Retire HS 5 and 6 CC 200 MW Market 50 MW	Retire HS 5 and 6 CC 200 MW Market 50 MW
2032	Market 50 MW	Wind 100 MW				Market 50 MW	Market 50 MW	Market 50 MW
2033	Retire Pete 1 CC 200 MW Market 100 MW	Retire Pete 1 CC 200 MW Wind 50 MW Market 50 MW	Market 50 MW	Retire Pete 1 CC 200 MW Market 50 MW	Retire Pete 1 CC 200 MW	Market 50 MW	Retire Pete 1 CC 200 MW Market 100 MW	Retire Pete 1 CC 200 MW Market 100 MW
2034	Retire HS7 CC 400 MW Market 150 MW	Retire HS7 CC 400 MW Market 100 MW	Retire HS7 CC 400 MW Market 100 MW	Retire HS7 CC 400 MW Market 50 MW	Retire HS7 GT 180 MW CC 200 MW Market 50 MW	Retire HS7 CC 400 MW Market 100 MW	Retire HS7 CC 400 MW Market 150 MW	Retire HS7 CC 400 MW Market 150 MW

IPL Selected Plans

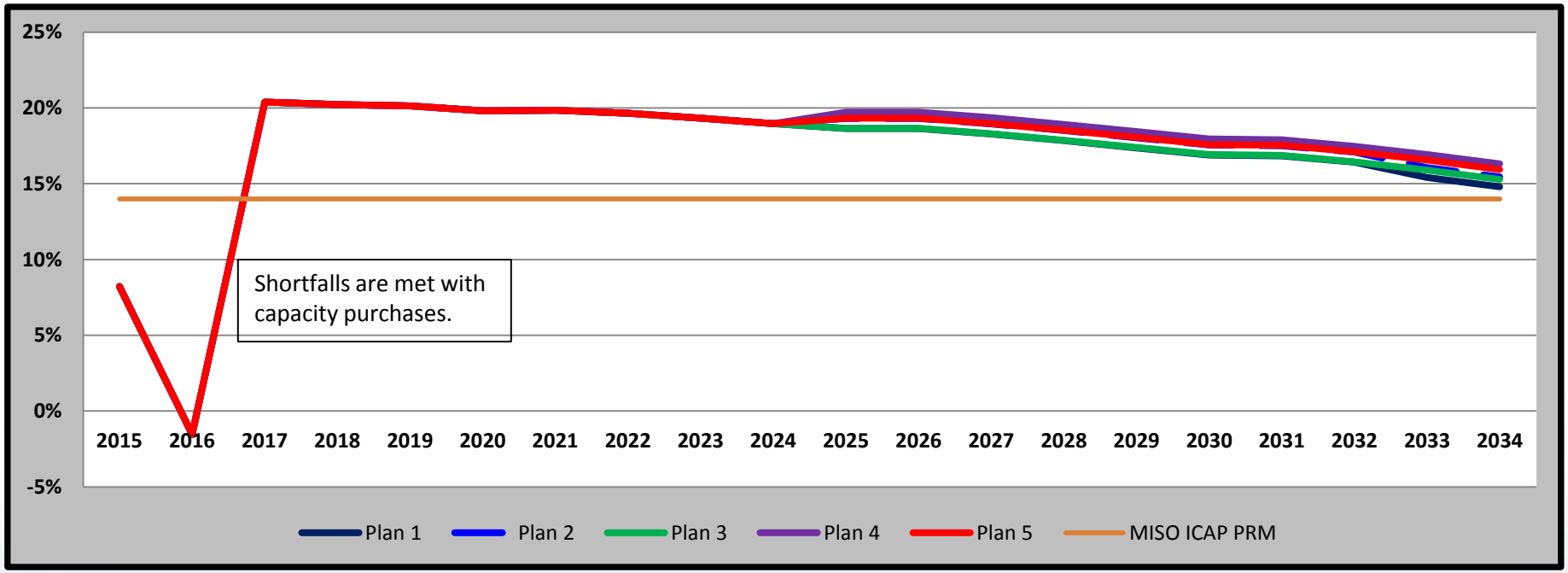
- Based on the Capacity Expansion Plan Results, the following five build out plans were created and modeled each in six of the eight scenarios:

No Early Retirements	
Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)
Pete 1 and 2 Retire in 2024	
Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Generation Mix in 2025

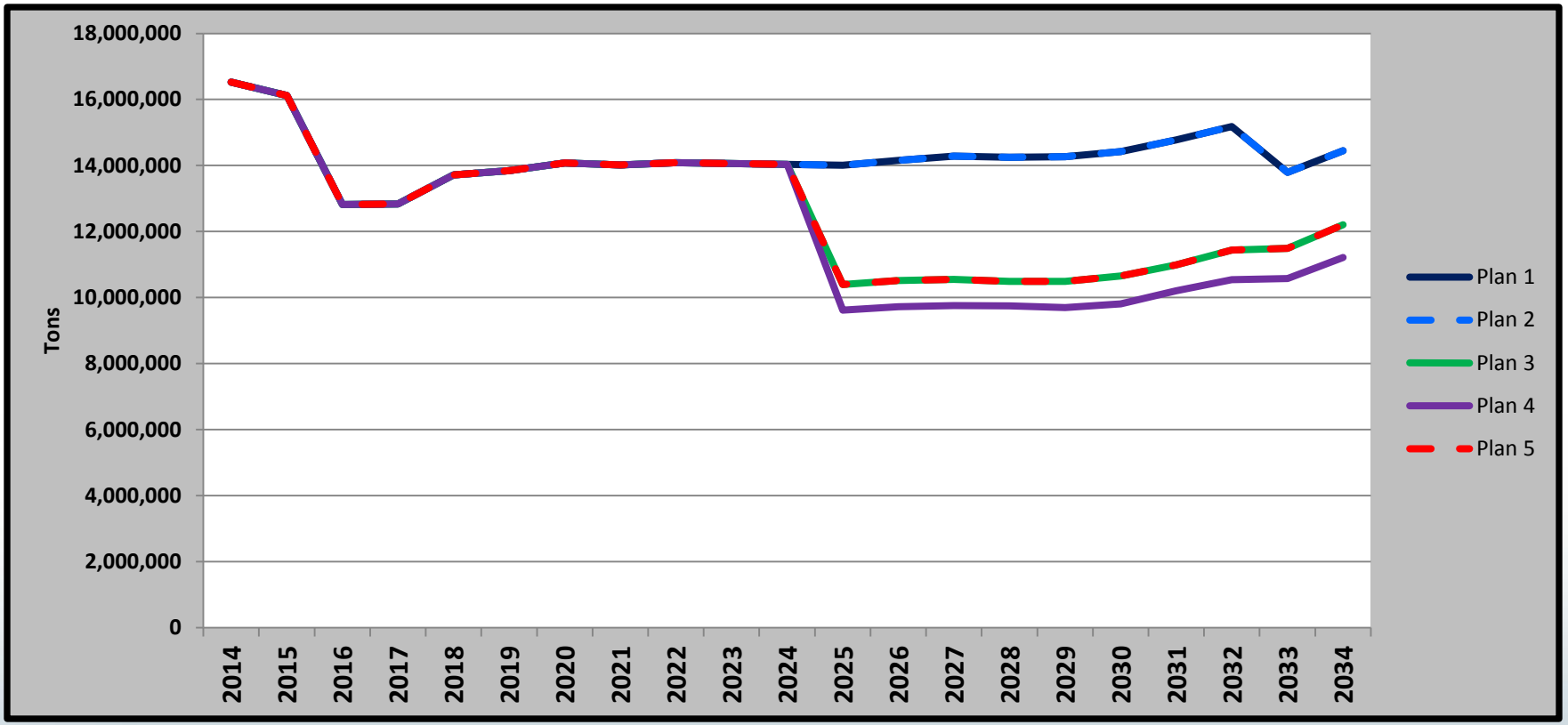


Reserve Margin Per Plan



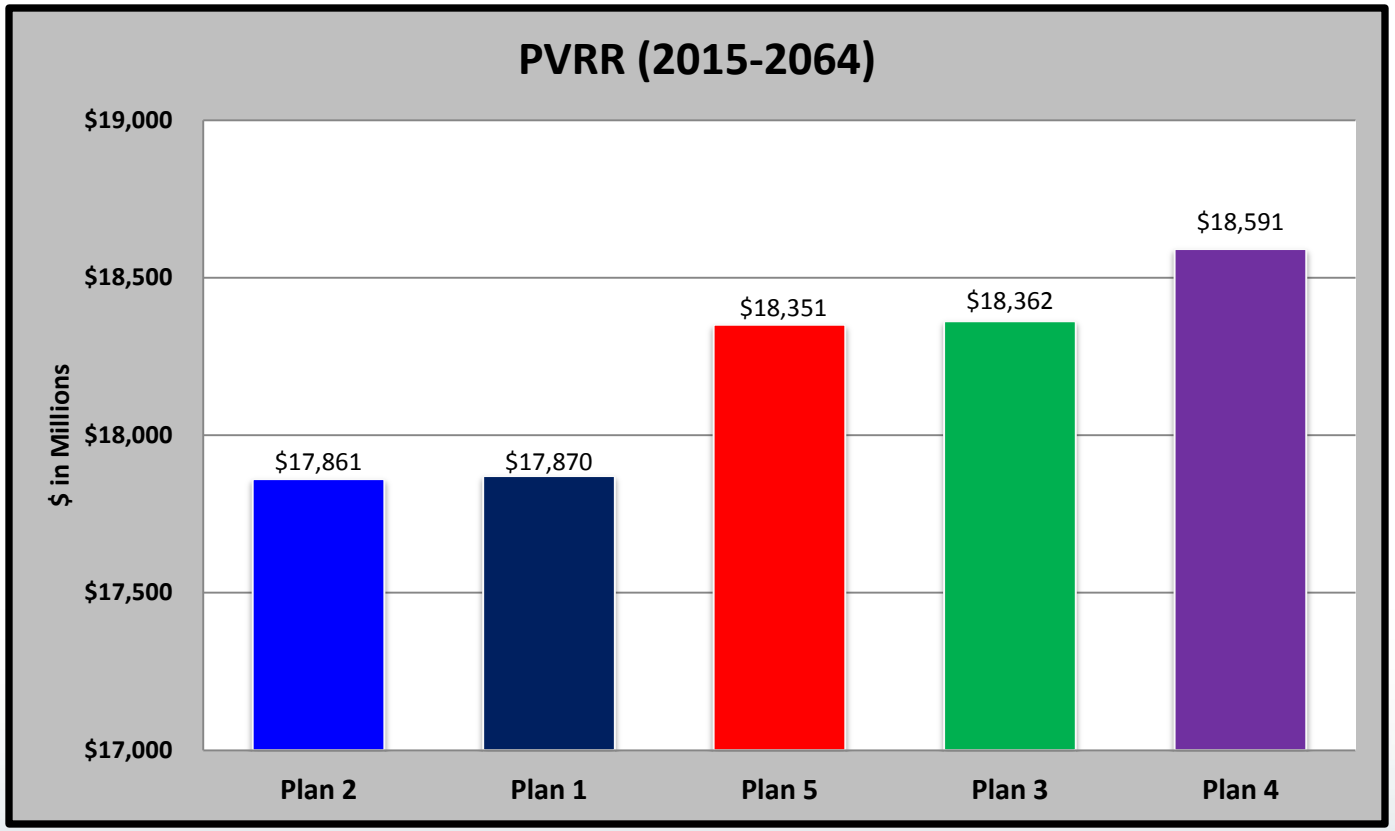
IPL meets its projected 14% reserve margin without capacity purchases for all years after 2017.

CO_2 Emissions Per Plan



Base

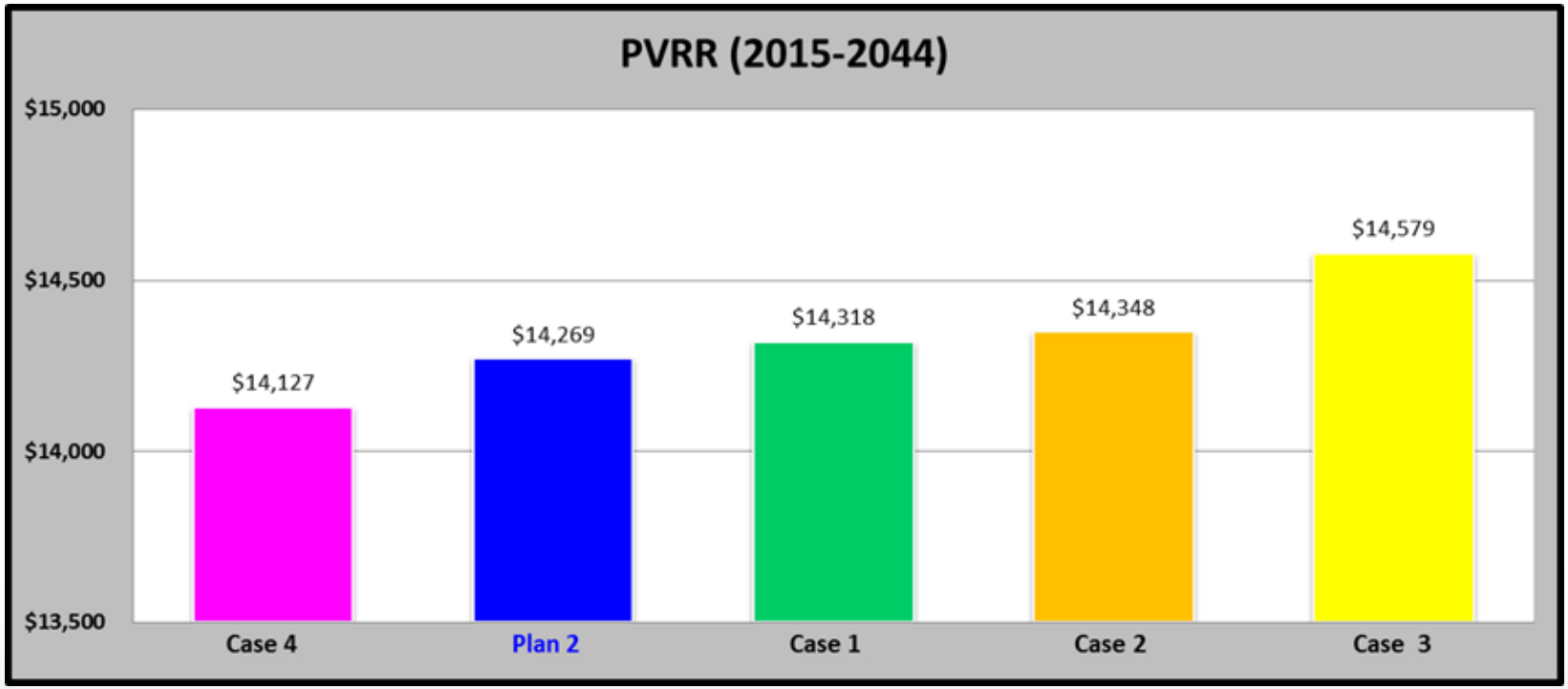
IPL's existing portfolio is cost effective.



Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)

Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Wind Sensitivity Results

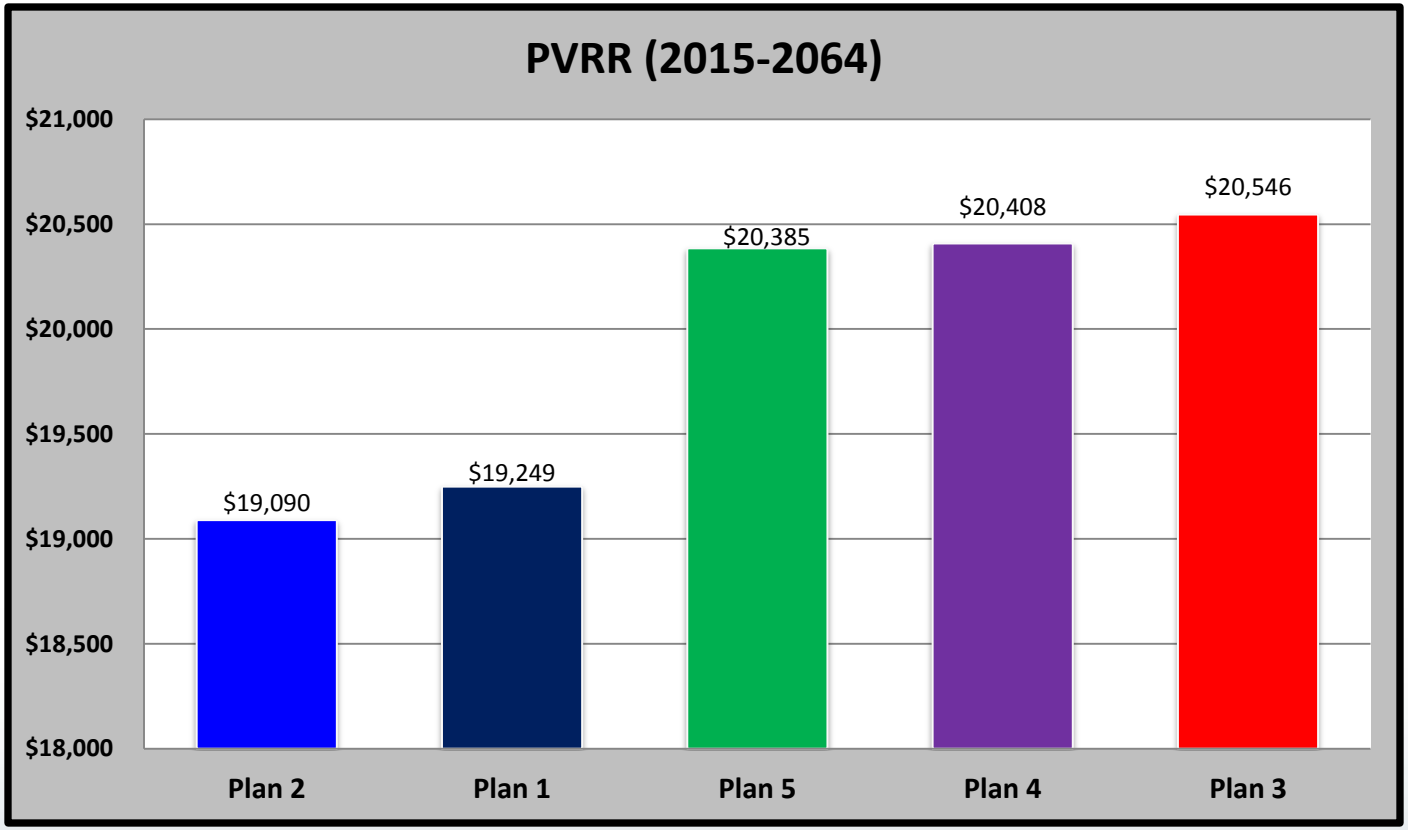


Wind resources are less cost-effective under current market-characteristics

Case 1	LMP Differential Applied
Case 2	25% Capacity Factor
Case 3	Wind with 12 MW Battery
Case 4	50% CF Wind PPA

High Gas

IPL's existing portfolio is cost effective.

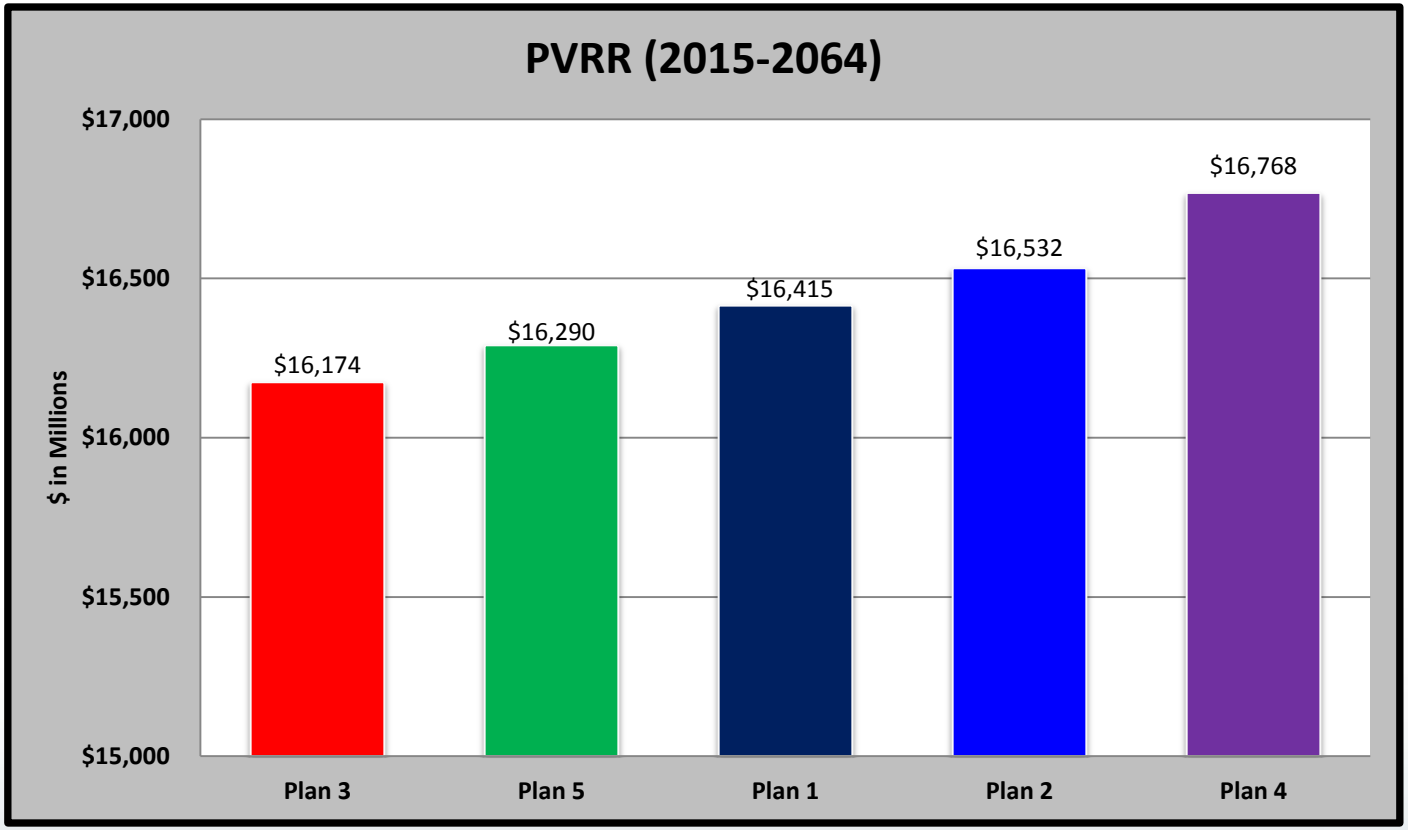


Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)

Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Low Gas

Plans with more gas-fired generation are cost effective.

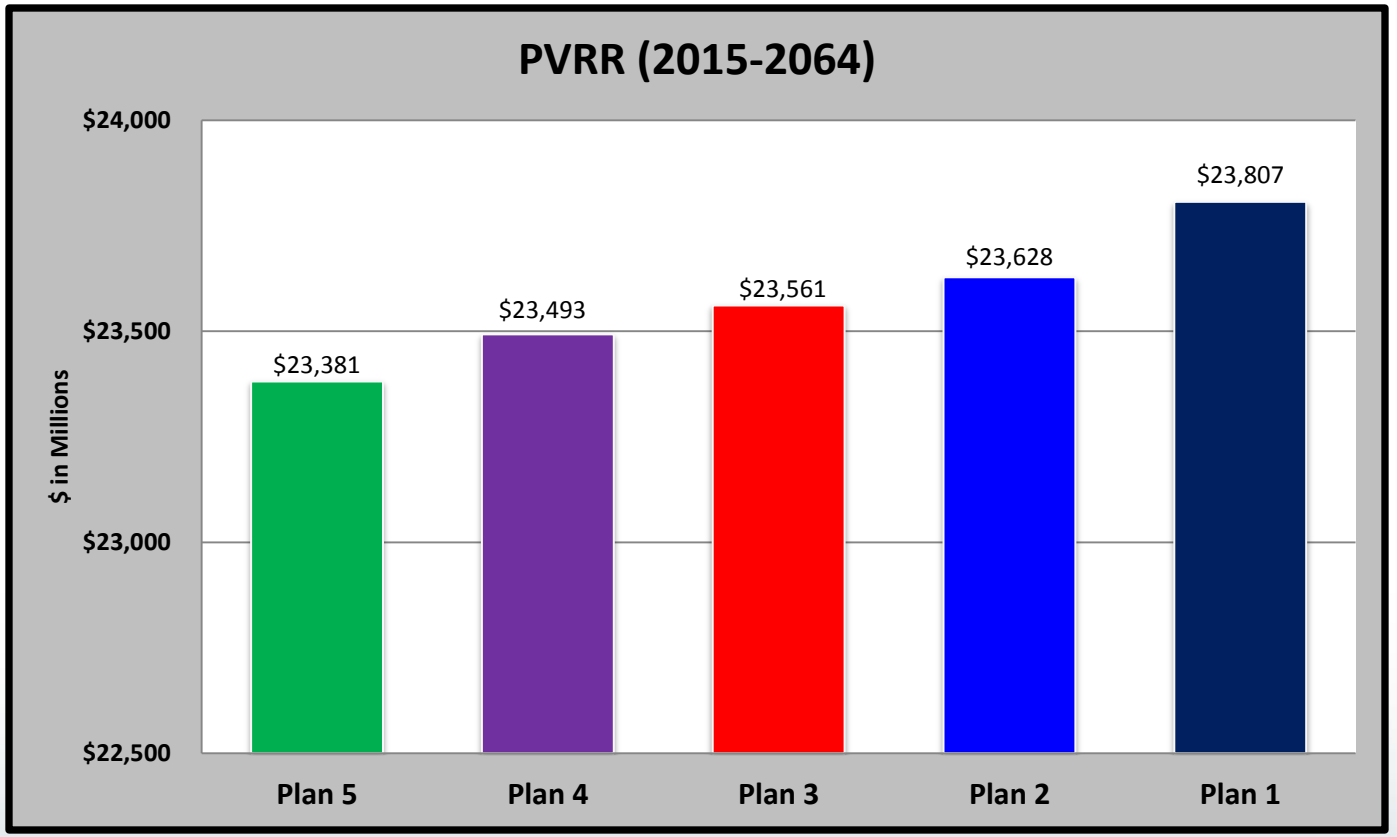


Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)

Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

High Environmental

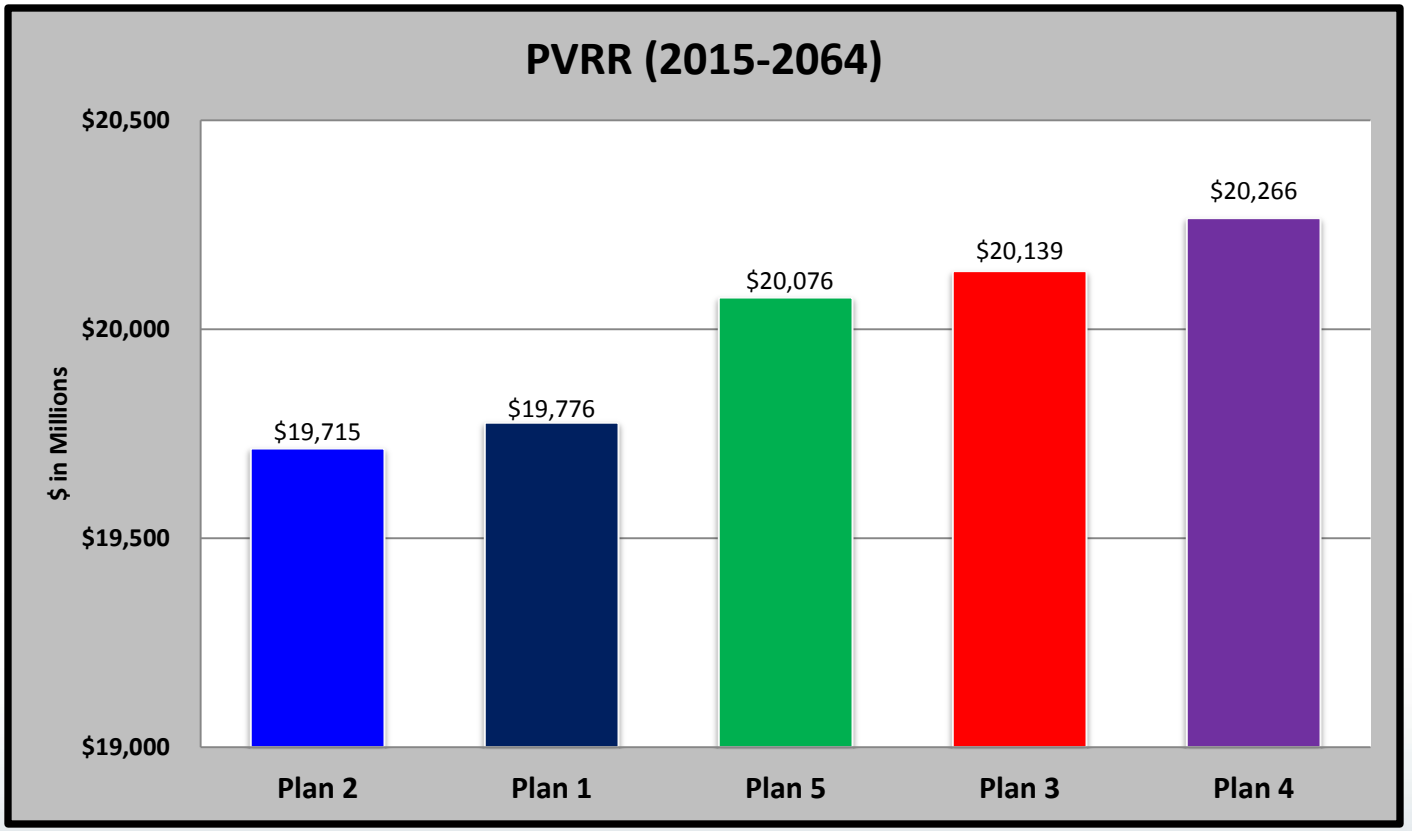
Significantly higher costs exist for all plans.



Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)
Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Environmental

IPL's existing portfolio is cost effective.

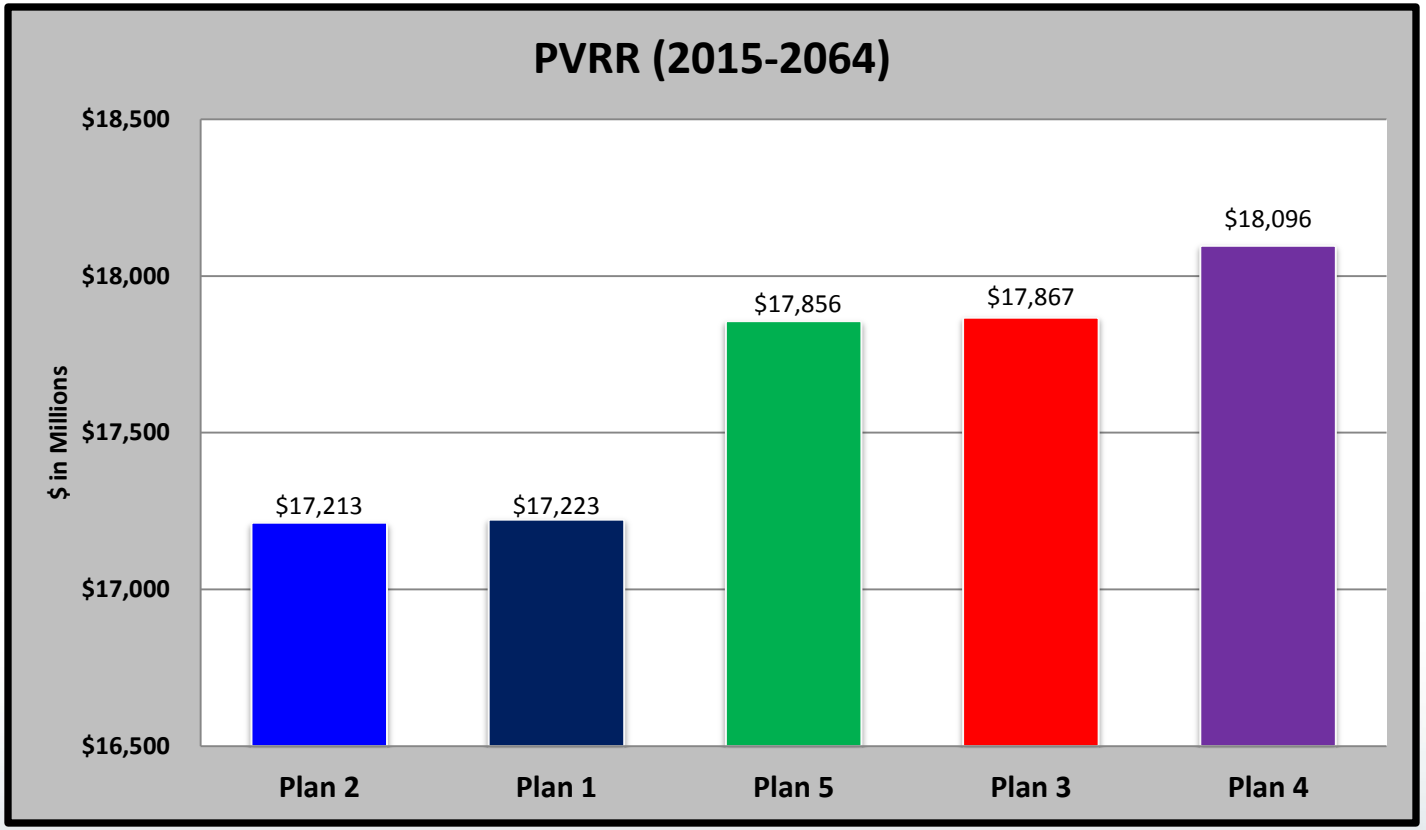


Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)

Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Low Environmental

IPL's existing portfolio is cost effective.



Plan 1	Base Case Expansion Plan
Plan 2	Additional 200 MW Wind (2025)

Plan 3	600 MW CCGT (2025)
Plan 4	550 MW CT and 500 MW Wind (2025)
Plan 5	600 MW CCGT and 200 MW Wind (2025)

Rationale for Determining Preferred Resource Portfolio

- IPL's base case reflects a combination of the most likely inputs and risks
- Risk management strategies were also incorporated into the development of seven (7) additional scenarios
- The preferred supply-side resource portfolio is the most reasonable cost option based on the lowest Present Value Revenue Requirement (PVRR)

IPL's IRP Preferred Resource Portfolio

- Plan 1 – Base Case Expansion Plan with no additional build is the Company's preferred resource portfolio
- IPL will continue to monitor risks associated with resource planning
- Additional resources may be added to mitigate CO_2 risks
- Since IPL files an IRP every two years, subsequent IRPs will re-analyze future options

Risks Associated with Resource Planning

IPL manages the following risks as a part of everyday business operations and in the IRP planning process

- Weather
- **Load Variation**
- Workforce Availability
- Reliability
- Technology Advancements
- Construction
- **Fuel Supply**
- **Fuel Costs**
- Production Cost Risk
- Generation Availability
- **Environmental Regulation**
- Access to Capital
- MISO Market Changes
- Regulatory
- Miscellaneous - Catastrophic Events

Risk mitigation will be discussed further in the IRP filing

Questions?

Short Term Action Plan

Presented by Joan Soller, Director of Resource Planning

Short Term Action Plan
Criteria Proposed in 170 IAC 4-7

- Explanation of the previous short term action plan and differences based on what actually transpired
- 3 year view (2015 through 2017)
- Description of preferred resource portfolio elements
- Implementation schedule

IAC – Indiana Administrative Code

IPL's 2011 IRP Short Term Action Plan

Summary	Implementation as of Sept 2014
• Retire the six (6) small unscrubbed coal-fired units by 2016 (EV Units 3-6 and HSS 5 and 6)	• Eagle Valley Units 3-6 will be retired by April 16, 2016 • Harding Street Station Units 5 and 6 will be refueled to natural gas
• Retire four (4) oil-fired units by 2015 (HSS Units 3 and 4 and EV Units 1 and 2)	• In 2013, IPL retired the four oil-fired units (HSS Units 3 and 4 and EV 1 and 2) mentioned along with HSS GT 3
• Retrofit "Big 5" to comply with EPA MATS regulation (Pete 1 through 4 and HSS 7)	• IPL received IURC approval to proceed to retrofit Petersburg units and construction is underway • IPL will seek approval to refuel HS7 to natural gas
• Meet IURC established DSM targets (Cause No. 42693)	• IPL expects to be at or near cumulative targets at the end of 2014. IURC targets have been suspended with the passage of SEA 340. IPL will continue to offer cost-effective DSM.
• Select and implement preferred resource to replace retirements	• IPL received approval to construct 671 MW EV CCGT (Cause No. 44339)
• Reduce capacity exposure resulting from IPL shortage in Planning Years 2015-2016 and 2016-2017	• IPL has purchased 100 MWs of Capacity for the two stated planning periods and continues to negotiate future needs
• Complete Distributed Automation and Advanced Metering Infrastructure Projects	• Projects have been completed and are fully operational

2014 Short Term Action Plan
Generation Portfolio

- Existing Generation
  - Refuel HSS Units 5-7 to natural gas in 2016
  - Retire EV Units 3-6 by April 16, 2016
  - Retrofit Petersburg Units to comply with MATS and NPDES regulations by the end of 2017
- New Generation
  - 671 MW Eagle Valley CCGT expected to be in-service by summer 2017
  - Additional generation is not needed to supply energy in the short term action plan

2014 Short Term Action Plan
Demand Side Management

- Continue to offer cost-effective DSM
- 2015-2017 Action Plan has been filed and is pending IURC approval (Cause No. 44497)
- Possible programs from BlueIndy Case settlement are pending IURC approval (Cause No. 44478)
  - LED street lighting
  - Demand response study with electric vehicle batteries
  - Energy management pilot program using ISO 50001

2014 Short Term Action Plan
Capacity Needs

- Purchased 100 MW of capacity for MISO Planning Years 2015-2016 and 2016-2017
- Waiting for FERC Waiver order for remaining PY 15-16 requirements
- Evaluate purchase options for PY 16-17 capacity shortage
  - Bi-lateral agreements
  - MISO auction purchases

FERC – Federal Energy Regulatory Commission

2014 Short Term Action Plan
Transmission and Distribution

- Transmission
  - Install Static VAR system for voltage regulation & VAR support
  - Improve import capability using the following:
    - Upgraded and new circuits (138 kV and 345 kV)
    - Upgraded autotransformers
    - New 345 kV breakers
    - New 138 kV breakers
- Distribution
  - Utilize & expand Smart Grid (SG) technology for operations
  - Complete distributed solar integration (~67 MW on line as of Sept 2014 plus additional 30 MW planned)
  - Utilize SG data for asset management planning

VAR – Volt-Ampere Reactive

2014 Short Term Action Plan
Research, Development, and Technology Applications

- IPL will continue exploring new technologies and resources that are safe, reliable, and efficient such as:
  - Energy Storage (Batteries)
  - Enhanced Combustion Turbine Output (Fogging)
  - Transportation Electrification
  - Leverage AMI Metering Technology

AMI – Advanced Metering Infrastructure

Questions?

Next Steps

Presented by Marty Rozelle, PhD

Next Steps

October 17, 2014	IRP Public Advisory Meeting #3 Notes Will Be Posted to the IPL IRP Website
By November 1, 2014	IPL to Submit IRP Document to the IURC
90 days after filing: ~February 1, 2015	Interested Party Deadline to Submit Comments to the IURC. See 170 IAC 4-7-2* for details.
120 days after filing: ~March 1, 2015	IURC Director's Draft Report will be Published

IAC – Indiana Administrative Code
*The draft proposed rule is available at: http://www.in.gov/iurc/2674.htm

IPL.IRP@aes.com

Thank You!