THE POWER OF PEOPLE®

Entergy Arkansas, Inc.
2015 Integrated Resource Plan

August 7, 2015
2015 IRP Stakeholder Meeting

2015 IRP Meeting Overview

- Welcome
- Safety
- Introductions

Agenda

Topic	Start Time	Name
Introduction and Meeting Objectives	8:00	Kurt Castleberry
Resource Planning Update	8:15	Matt Wolf
Transmission Planning Update	8:45	Melinda Montgomery
Demand-side Management Update	9:00	Richard Smith
Overview of Environmental Issues	9:30	Kelly McQueen
Break	*10:00*	
IRP Process Overview	10:10	Kandice Fielder
Generation Technology Assessment	10:25	Charles DeGeorge
Sales and Load Forecasts	10:50	Charles John
Preliminary Results and Next Steps	11:15	Kandice Fielder
Lunch	*12:00*	
Stakeholder Committee Formation	1:00	Kandice Fielder
Wrap-up	1:45	Kurt Castleberry

What is the Purpose and Objective of Today's Meeting?

- Discuss EAI's Integrated Resource Plan process, assumptions, preliminary plans and schedule

- Allow stakeholders an opportunity to organize a committee to develop the Stakeholder's Report

What is Integrated Resource Planning?

- *"…..a utility planning process which requires consideration of all reasonable resources for meeting the demand for a utility's product, including those which focus on traditional supply sources and those which focus on conservation and the management of demand."*

- *" The process results in the selection of that portfolio of resources which best meets the identified objectives while balancing the outcome of expected impacts and risks for society over the long run."*

- Source: APSC's Resource Planning Guidelines

Who Comprises the Stakeholder Committee and Why Stakeholder Involvement?

The Stakeholder Committee is comprised of:

"…..retail and wholesale customers, independent power suppliers, marketers, and other interested entities in the service area."

Why?

"The reason for stakeholder involvement is to open up the planning process and provide an opportunity for others with an interest in the planning process to provide input as a check on the reasoning of a utility during the development of the resource plan."

- Source: APSC's Resource Planning Guidelines

EAI and Stakeholder Committee – Roles and Responsibilities

- EAI will:
  - *"organize and facilitate meetings of a Stakeholder Committee for resource planning purposes"*
  - *"make a good faith effort to properly inform and respond to the Stakeholder Committee"*
  - Include a Report of the Stakeholder Committee with EAI's October 2015 Integrated Resource Plan filing

- The Stakeholder Committee:
  - *"shall develop their own rules and procedures"*
  - *"Stakeholders should review utility objectives, assumptions and estimated needs early in the planning cycle"*
  - Develop a report of the Stakeholder Committee and provide to EAI

Stakeholder Process Timeline

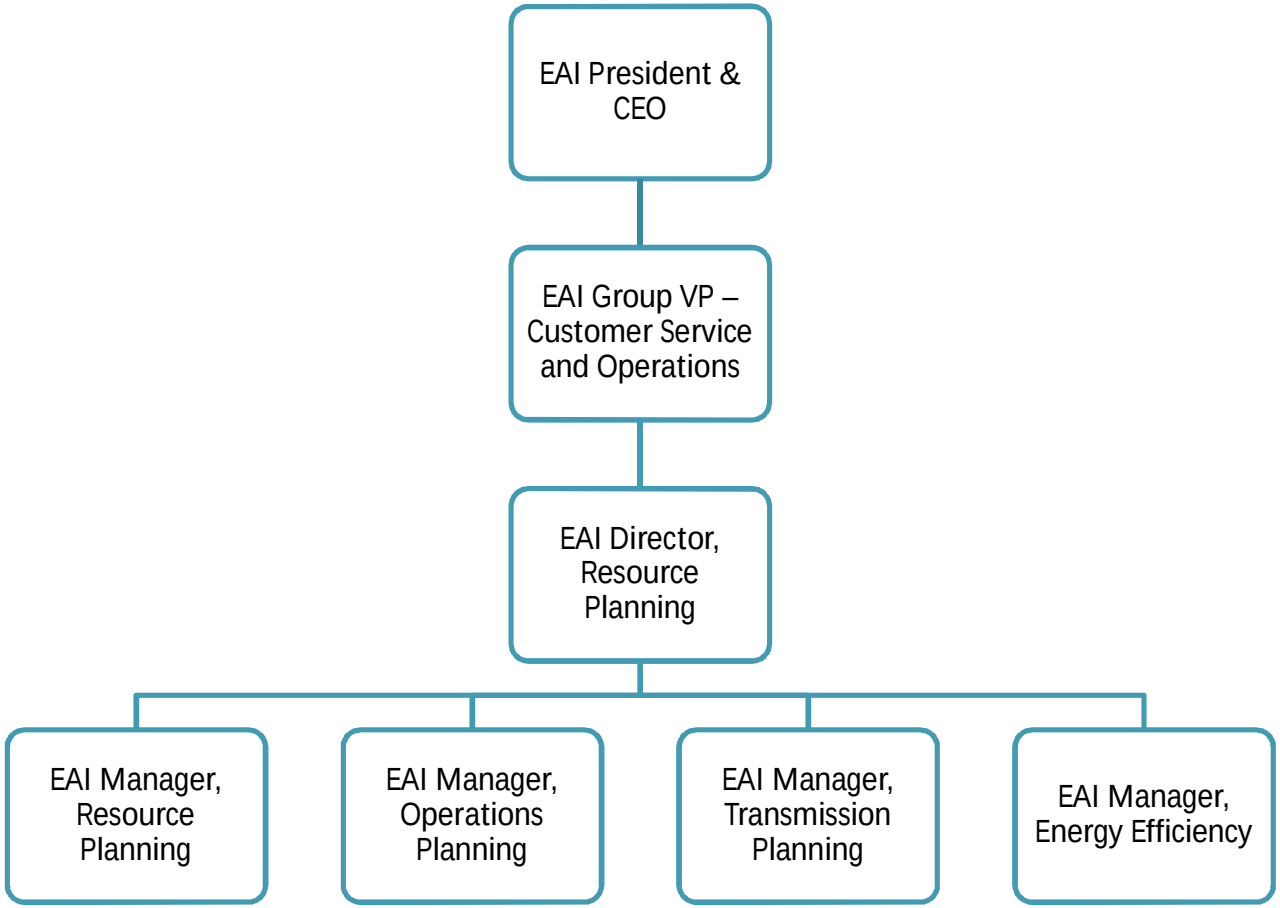
ACTIVITY	DATE
Stakeholder meeting	August 7
Stakeholder / EAI interaction (as needed)	August 7 – October 2
Stakeholders finalize Stakeholder Report and provide to EAI	October 16
EAI finalizes IRP and files written report with the APSC including Stakeholder Report	October 31

Ground Rules

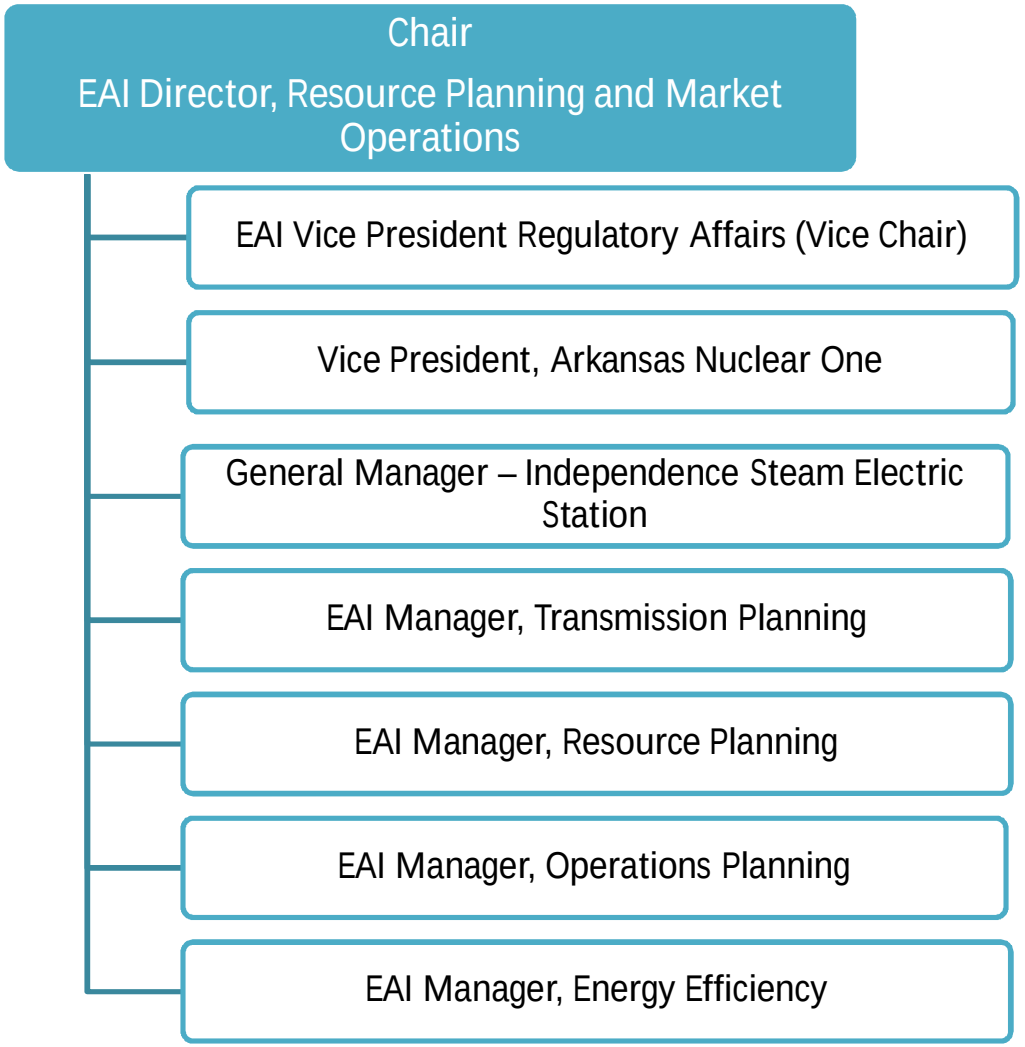
- A lot of material – Need to stay on schedule
- Ask questions but time constraints may limit number of questions allowed. However, EAI will answer ALL stakeholder questions either in today's meeting or the written questions and their answers will be posted @ http://entergy-arkansas.com/transition_plan/
- Cards are available at each table for written questions. Please use these cards for the more extensive questions. EAI will answer these questions at the end of today's session or will post answers at the above link
- Stay on topic – Do not interject questions or comments related to other issues.
- Keep side-bar discussions to a minimum
- EAI will endeavor to respond to questions or get information to Stakeholder Committee members as quickly as is practical

EAI Resource Planning Organization and Governance

EAI Management Structure with Key Roles for Resource Planning and Operations



EAI Resource Planning and Operations Committee (RPOC)



Questions / Comments

Resource Planning Update

Resource Planning Update

- Review the Action Plan from EAI's 2012 IRP Report.

- Update the Stakeholders on key Resource Planning Activities.

2012 IRP Action Plan

1. MISO Transition
2. Coal Unit Environmental Compliance
3. Hot Spring Plant Acquisition
4. Purchase Power Agreements from EAI's 2011 RFP
5. Available Wholesale Base Load Capacity to Retail
6. Hydro Peaking Capacity to Retail
7. DSM and Energy Efficiency Expansion
8. Lake Catherine 4 Reliability / Sustainability
9. Older Natural Gas Fired Unit Deactivation Decisions
10. Renewable Energy Assessment
11. Short- and Intermediate-Term RFPs

#1 MISO Transition

- Integration into MISO took place on December 19, 2013
- EAI customers saved an estimated $46 Million during the first year
  - Reduced capacity requirements are estimated at 344 MW
- EAI has successfully participated in three MISO Planning Resource Auctions
  - Transitional auction, 2014/15 auction, 2015/16 auction
  - Modified the Optional Interruptible Service Rider (OIS-R) and registered as a Load Modifying Resource (LMR) for the 2015/16 auction.
- EAI recently filed a report detailing EAI participation in the MISO Auctions in APSC Docket No. 10-011-U

Action Items #2, #3 and #4

#2 The Environmental Compliance update will be provided by Kelly McQueen

#3 Hot Springs Plant Acquisition

- EAI completed the acquisition in December 2012.
- Added approximately 600 MW to EAI's portfolio.

#4 Purchase Power Agreements from EAI's 2011 RFP

- EAI executed a PPA with Union Power Partners in October 2012.
- APSC approval was obtained in APSC Docket No. 12-038-U.
- Added approximately 500 MW for the period of December 19, 2013 through May 31, 2017.
- Contract negotiations for a second proposal selected in the 2011 RFP was concluded without execution of a contact.

#5 - Available Wholesale Base Load Capacity

- In APSC Docket No. 12-038-U, EAI offered to move approximately 286 MW of capacity that has previously been used to serve the wholesale sector and 59 MW of capacity from its retained share of the Grand Gulf Nuclear Plant to serve retail customers.

- The docket was settled with 186 MW of nuclear based generation from the Arkansas Nuclear One units being transferred to serve retail customers.

Action item #6 and #7

#6 Hydro Peaking Capacity to Retail

- The wholesale allocation factor was updated in APSC Docket No. 13-028-U.
- Added approximately 10 MW.

#7 DSM and Energy Efficiency Update will be provided by Richard Smith.

Since 2012, incremental EE installations have contributed to approximately 135 MW savings across EAI's peak.

#8 - Lake Catherine 4 Reliability / Sustainability

- Lake Catherine 4 is a 516 MW gas fired unit that was originally scheduled to deactivate at the end of 2014.
- A Reliability/Sustainability program was developed and implementation is on-going.
- The unit is currently expected to be available through May 31, 2025.
- Adds approximately 516 MW.

#9 – Older NG Fired Unit Deactivation Decisions

- Since the 2012 IRP, EAI deactivated approximately 420 MW of older natural gas / diesel fired generation.
- Total generation retirements since the 2012 IRP totaled approximately 964 MW across 13 units.
- Two more older units totaling approximately 28 MW are planned to retire at the end of May 2016.

10 – Renewable Energy Assessment

- EAI issued an RFP for both traditional and renewable resources on May 5, 2014.

- EAI entered into a contract on April 3, 2015.
  - 20 year PPA for approximately 81 MW.
  - Energy deliveries to begin no later than May 31, 2019.
  - Expect 20 to 40 MW of capacity at peak.

- Approval of the PPA is pending before the APSC in Docket No. 15-014-U.

11 – Short- and Intermediate-Term RFP

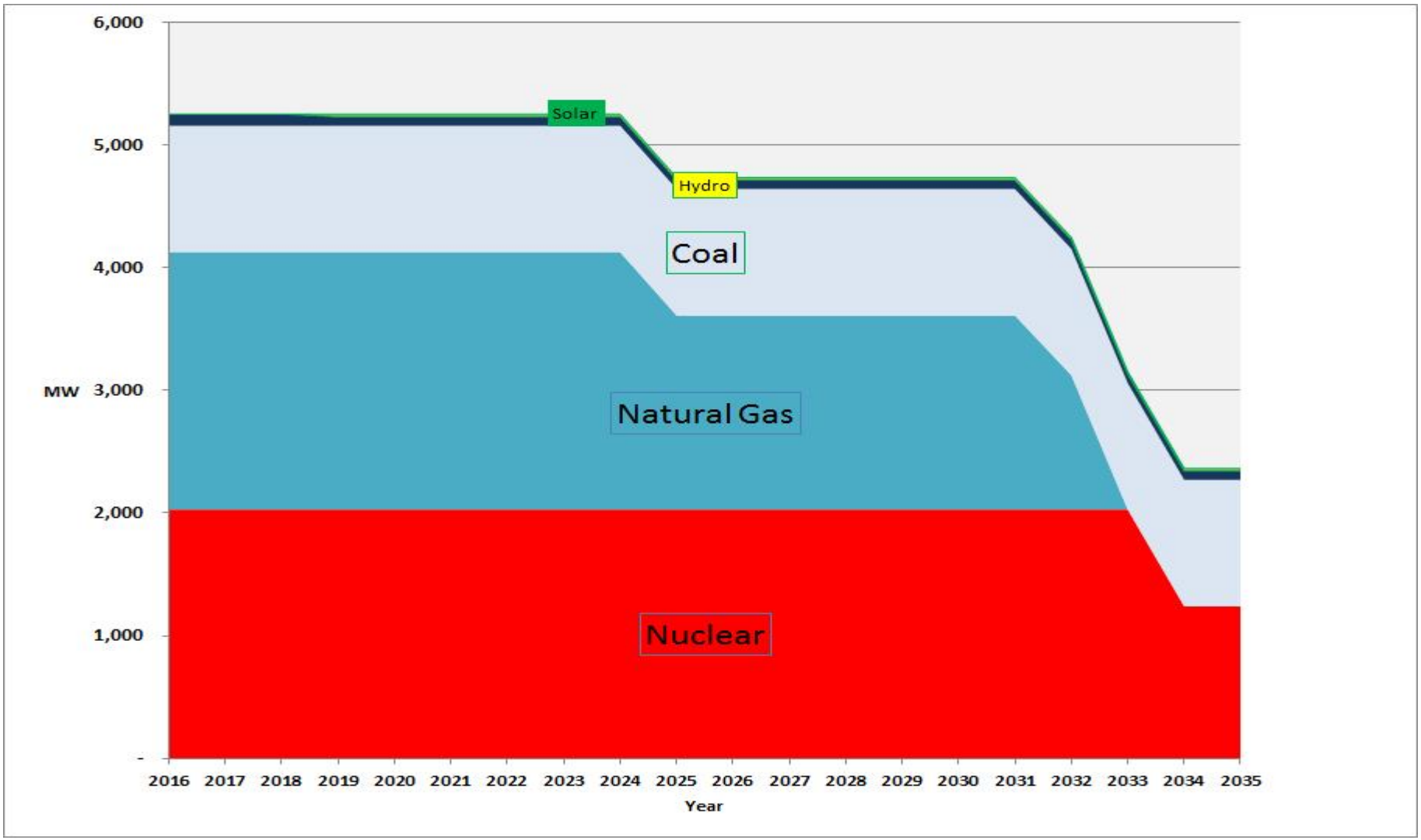
- EAI elected to issue an RFP for long-term renewable and intermediate resources on May 5, 2014.
- EAI entered into an asset purchase agreement with Union Power Partners on December 8, 2014, to acquire power block 2 which will add approximately 495 MW to EAI's portfolio.
- APSC approval is pending in Docket No. 14-118-U as well as required federal reviews /approvals.

Resource Planning Summary

- Completed: (summer ratings)
  - MISO Membership: +344 MW
  - Hot Spring Power Plant: +600 MW
  - EE / DSM: +135 MW
  - Wholesale Capacity: +186 MW
  - Wholesale Hydro Capacity: +10 MW
  - Lake Catherine 4: +516 MW
  - Retirements: -964 MW

- Planned:
  - UPP Power Block 2: +495 MW
  - Stuttgart Solar PPA: +20 MW

EAI Supply Side Resources – Existing and Planned



Questions / Comments

Transmission Planning Update

Transmission Planning Update

- What has changed since 2012.
- What hasn’t changed.
- Transmission Planning analysis

What has changed since 2012 in Transmission Planning

- EAI joined MISO
  - EAI responsible for its transmission plans, apart from the System Agreement companies
  - New regional and interregional planning processes for transmission projects
  - New economic planning process
- New planning standards that apply to all Transmission Planners

What hasn't changed in Transmission Planning

- EAI is responsible for planning to meet reliability standards and local planning criteria.
- Our focus remains on providing reliable service to customers and maintaining reasonable rates.
- We still use an open and transparent stakeholder process in transmission planning, including discussion of alternatives.

Recent Transmission Projects at a Glance

		APPENDIX A			APP B
	Total	Future/in-progress	Complete	Est. Cost	Studied for Future
Pre-Planned	23	10	13		-
MTEP 14	31	21	8	$66M	2
MTEP 15*	19	8	-	$128 M	5
MTEP 16**	15	9	-	Not yet final	6

Pre-planned projects are those that had already been through the planning process before EAI joined MISO.
*MTEP 15 process is still in progress. Approval of projects to occur in December 2015.
**MTEP 16 local planning is on-going. Projects and costs are not yet final.
Appendix A are those projects approved by the MISO Board, or submitted for study in the current year requesting approval.
Appendix B are those projects that are farther in the future. They are submitted for study but not for approval in the current planning cycle.

Transmission Planning and the IRP

- Should the 2015 IRP Action Plan guide EAI to pursue and evaluate options for additional generating resources (for example, through an RFP), transmission analysis of resource options will be done to determine transmission impact.
- Analysis will include the transmission topology and limit information including planned projects from MISO's regional MTEP plan.

Questions / Comments

Demand-side Management Update

DSM Progress since 2012

This section is to outline the progress EAI has made with DSM and DR since the 2012 IRP.

- In 2011, the Commission established DSM Targets of:
  - 0.25% of retail sales in 2011,
  - 0.5% retail sales in 2012, and
  - 0.75% of retail sales in 2013.
- In 2014, the Commission extended the target 0.75% of retail sales.
- In 2015, the Commission again extended program at a Target level of 0.9% of retail sales.
- All programs are to be based upon the Comprehensiveness orders made in December 2010 and further program design requirements for weatherization and Commercial and Industrial Programs in 2013.
- Going forward, the Commission is requiring the RECC method of determining avoided capacity cost which reduces cost effectiveness of DSM and DR when compared to levelized avoided capacity cost, as is best practices in all other jurisdictions.
- Forward looking targets have not yet been established. However, EAI has planned using a strategy of flat achievement and cost adjusted for inflation in this IRP.

2012-14 DSM Achievement

DSM and Energy Efficiency Expansion

– Since 2012 EAI has added 135 MW[1] of peak period savings and 501,691 MWh of at-the-meter energy efficiency through its Energy Efficiency Portfolio[2].

	Evaluated Achievement		
	2012	2013	2014
Energy Savings (KWH)[3]	107,626,826	188,556,802	205,506,894
Demand Reduction (KW)[3]	23,261	49,900	63,045
DR Budget	$8,669,000	$6,793,000	$7,605,000
DSM Budget	$30,940,000	$51,633,000	$57,849,000
Total Budget	$39,609,000	$58,426,000	$65,454,000
Actual Spend	$28,395,000	$53,032,000	$59,914,000
Percent of Sales (Evaluated)	0.51%	0.90%	1.00%
Total Resource Cost Ratio	1.2	2.2	3.4

1. Peak savings are adjusted to reflect only the incremental savings added over the 2012-14 time period.
2. Accumulation of 2012, 2013 and 2014 reported and evaluated achievement.
3. The savings in the table above do not include T&D adjustment.

2015 DSM Projected Achievement

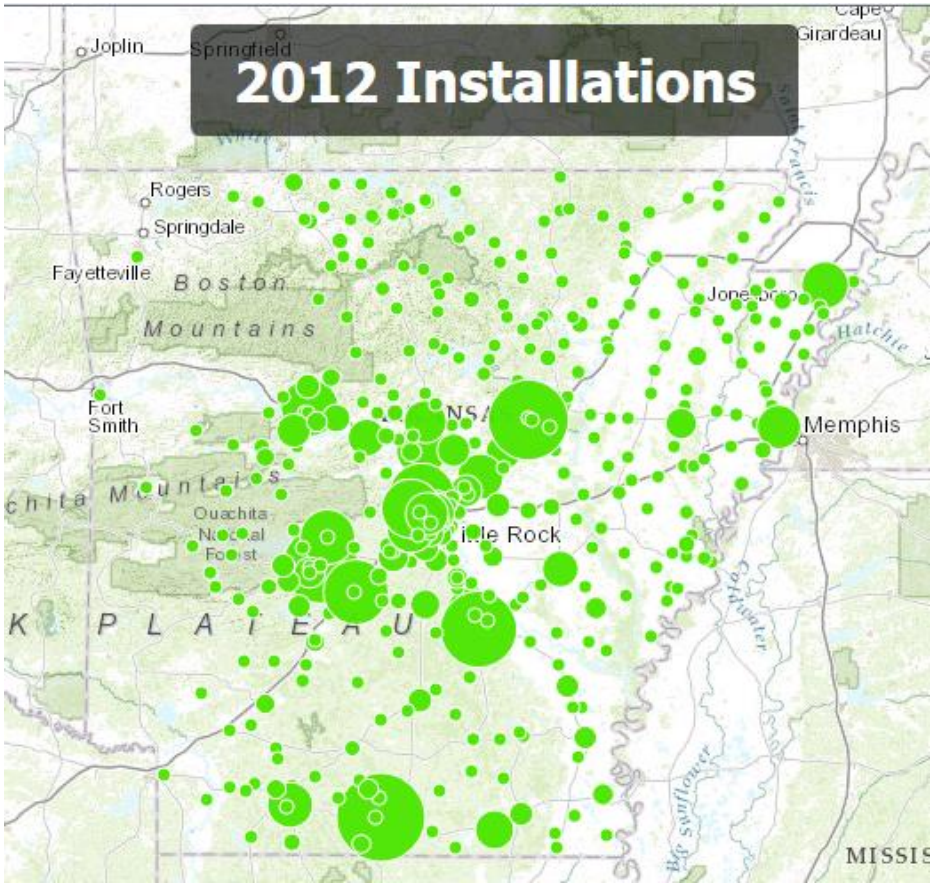
- EAI is on track to achieve and exceed our 2015 DSM and DR target of 178,869 MWHs subject to retroactive Technical Resource Manual ("TRM") updates and Independent EM&V Results.
- The 2015 Plan is demonstrated below:

	2015
Energy Savings (KWH)*	235,798,383
Demand Reduction (KW)*	79,300
DR Budget	$8,929,000
DSM Budget	$62,249,000
Total Budget	$71,178,000
Actual Spend	
Percent of Sales (Evaluated)	1.15%
Total Resource Cost Ratio	1.8

*The savings in the table above do not include T&D adjustment.

Where DSM and DR Are Occurring – 2012

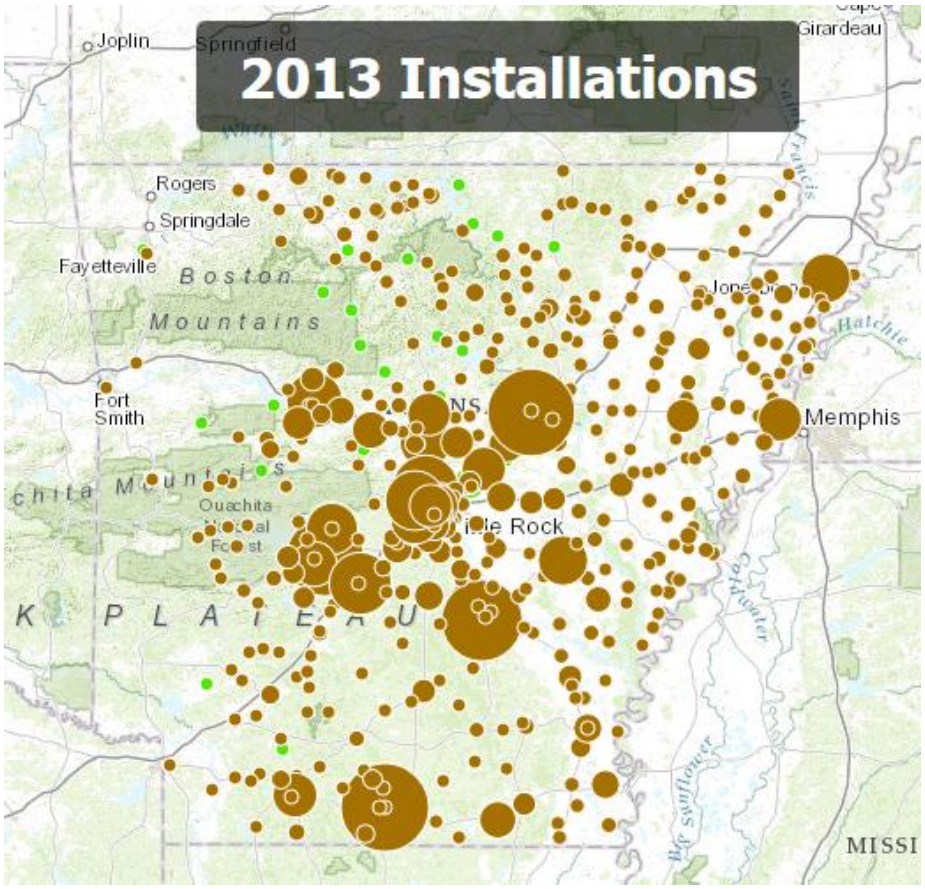
2012 Achievements



DRAFT

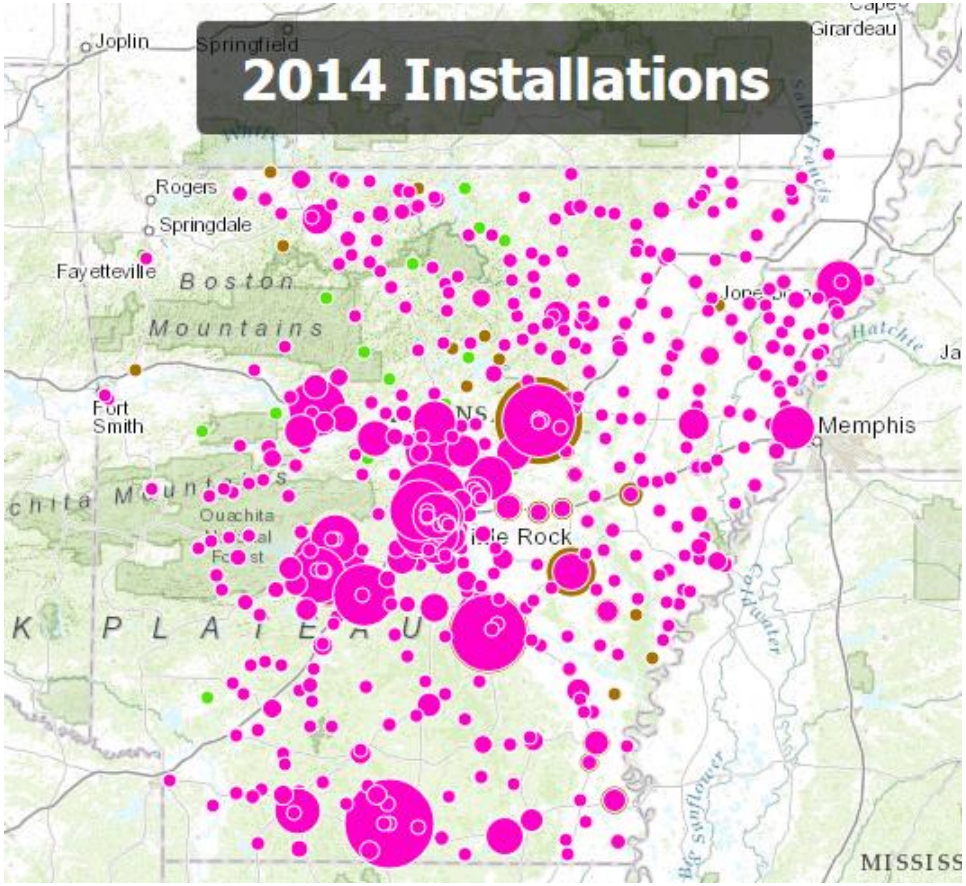
Where DSM and DR Are Occurring – 2012-13

2012 and 2013 Achievements



Where DSM and DR Are Occurring – 2012-14

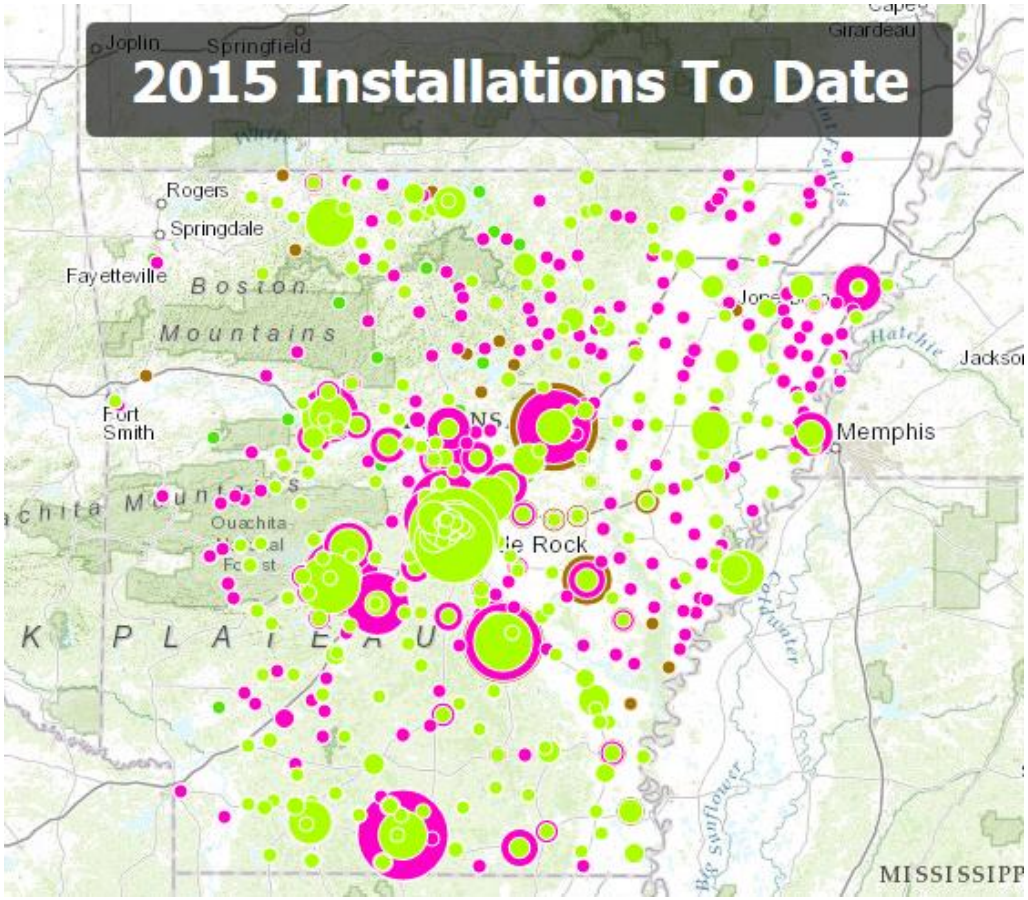
2012 through 2014 Achievements



DRAFT

Where DSM and DR Are Occurring – 2012-15

2012 through 2015 Achievements



Proxy for the Next Three Year Plan

- EAI had prepared to file a Three Year Plan covering 2016 through 2018 before the Three Year Plan filing was delayed until June of 2016.
- Our 2016 DSM and DR plan reflects the first year of the 2016 through 2018 Three Year Plan.
- The 2016 through 2018 Plan included the following:
  - The RECC Method of avoided capital cost,
  - Consideration of EM&V uncertainties,
  - Plan to attempt to maximize performance incentives of 120% of utility target.

Proxy for the Next Three Year Plan

- EAI Proxy for the 2016 through 2018 Three year plan
- Plan is subject to change based upon final regulatory decisions in 2015, TRM and EM&V updates.

	Projected		
	2016	2017	2018
Energy Savings (KWH)*	260,304,000	260,304,000	260,306,000
Demand Reduction (KW)*	100,200	100,200	110,700
DR Budget	$7,163,000	$6,588,000	$7,210,000
DSM Budget	$58,801,000	$59,871,000	$59,261,000
Total Budget	$65,964,000	$66,459,000	$66,471,000
Actual Spend			
Percent of Sales (Evaluated)	1.27%	1.27%	1.27%
Total Resource Cost Ratio	2.3	2.3	2.3

*The savings in the table above do not include T&D adjustment.

Four Types of DSM in Planning

Customer-sponsored DSM	Existing Utility-sponsored DSM	Incremental Utility-sponsored DSM	Interruptible Loads/DR
• Improvements in energy efficiency and conservation that occur without Utility involvement. • An assumption for this type of DSM is included in the Retail Sales Forecast.	• Generally, large scale, regulator approved programs that provide incentives to go above and beyond efficiency standards. • An assumption for the impact of existing programs is included in the Retail Sales Forecast.	• These programs are like existing Utility programs but require regulatory approval to implement. • An assumption for incremental programs is included in the Retail Sales Forecast.	• Programs that provide the Utility with the right to curtail service to a participating customer. • These resources are modeled like a supply side resource.

2015 IRP Utility-sponsored DSM Assumptions

- Existing Utility-sponsored DSM: The energy saving and peak reducing impacts of these programs are reflected in the actual historical customer usage data which is an input to the Sales and Load forecasts.
- Incremental Utility-sponsored DSM: Since the Arkansas DSM Potential Study was still underway and no direction regarding future DSM Targets was available at the time, EAI assumed 0.9% of retail sales above forecast without DSM (above naturally occurring DSM) as the DSM proxy within the Sales and Load forecasts.
  - This results in an annual incremental reduction in sales of 165,468 MWh[1] and assumes a 10-year measure degradation curve.
  - Any free ridership, or overlap between the Customer-sponsored DSM and the Incremental Utility-sponsored DSM, is also accounted for so that the impacts are not double-counted.

1. Based on 2013 Program Year planned net annual savings, Docket No. 07-085-TF Doc 443

2015 IRP DSM Assumption Principle Based

EAI remains committed to DSM and DR as long the achievement can be accomplished in a cost effective manner when compared to a utility future avoided or delayed generation cost and full cost recovery remains in place.

Also, EAI continues to investigate opportunities for advance metering infrastructure which may enhance the future DSM and DR portfolio.

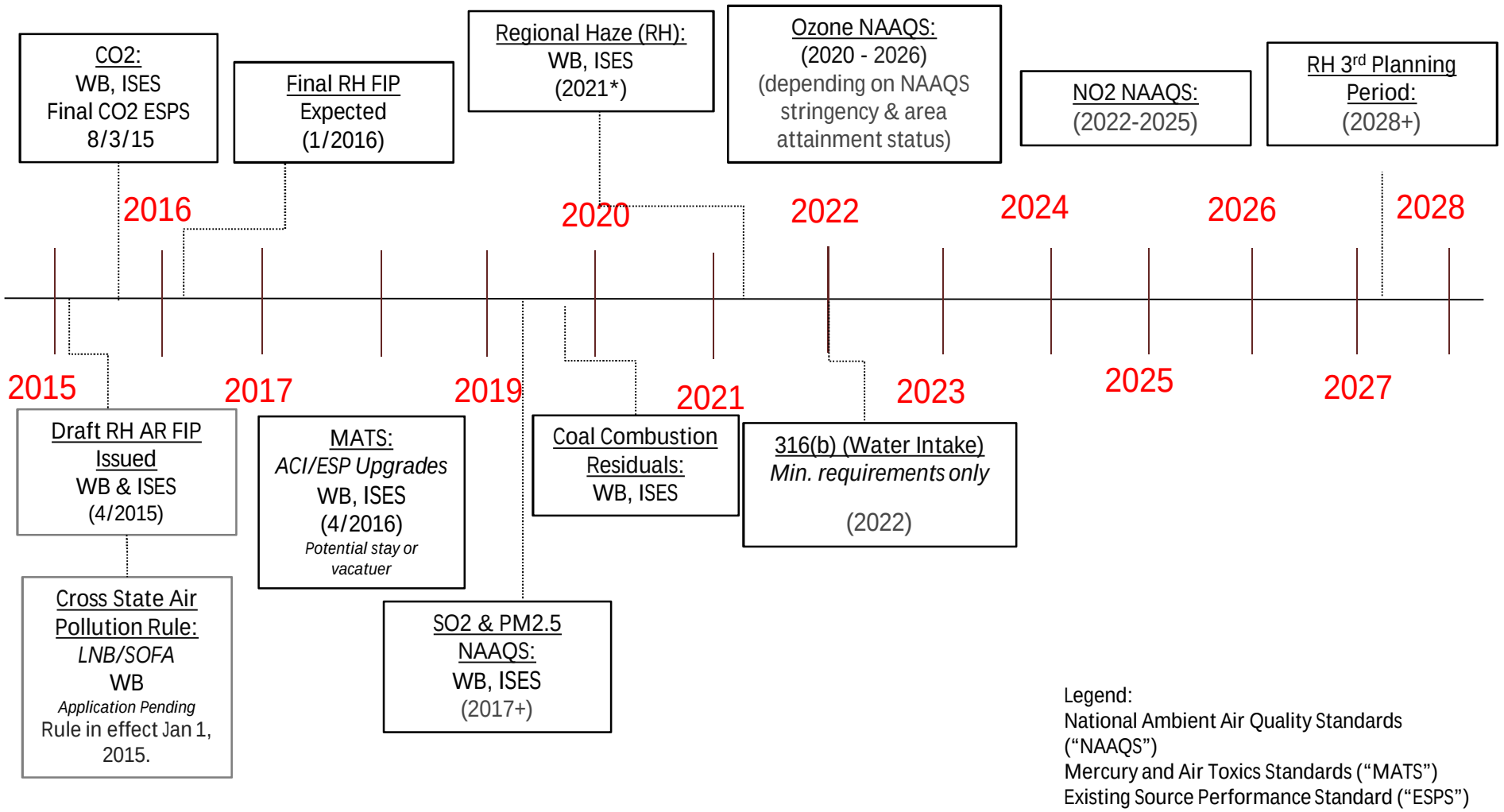
Questions / Comments

Overview of Environmental Issues

Overview of Environmental Issues

- Potential Environmental Compliance Timeline
- MATS
- Regional Haze
- CSAPR & NAAQS (SO2 and Ozone)
- Clean Power Plan (CO2)

Potential Environmental Compliance Timeline



Legend:
National Ambient Air Quality Standards ("NAAQS")
Mercury and Air Toxics Standards ("MATS")
Existing Source Performance Standard ("ESPS")

Entergy

Overview of Environmental Issues - MATS

MATS:

- Extensions granted/compliance April 2016
- ACI/ESP upgrades complete – WB/ISES
- Commissioning/testing ongoing
- 6/30/15 Supreme Court decision
- D.C. Circuit to decide whether MATS is stayed, vacated or remains in effect pending remand to EPA
  - Expected decision by end of year 2015

Overview of Environmental Issues – Regional Haze

Regional Haze:

- April 8, 2015 proposed Federal Implementation Plan:
  - Lake Catherine 4: BOOS (BART)
  - White Bluff: LNB/SOFA and dry FGD (BART)
  - Independence: LNB/SOFA and dry FGD (Reasonable Progress)
    - Also taking comment on dry FGD only
- Comment Deadline extended to August 7, 2015
- EAI Comments:
  - Independence should not have been included as AR is below the "Glidepath"
  - Proposes long term, multi-unit approach:
    - White Bluff : Cease to use coal in 2027/2028
    - White Bluff & Independence: LNB/SOFA within 3 years of final FIP and lower SO2 rate in 2018
- Final FIP expected in 1Q2016

Overview of Environmental Issues – CSAPR & NAAQS

CSAPR:

- May 1, 2015: CSAPR begins for seasonal program states
- WB: LNB/SOFA permit application pending
- July 2015: D.C. Circuit overturns state budgets in several states (not AR)

1 hour SO2 NAAQS:

- Pursuant to consent decree
  - State proposed designations for areas around WB and ISES due: September 2015
  - EPA designation expected: July 2016
- Not expected to be an independent driver of controls at either plant

8 hour Ozone Standard:

- Current standard: 75 ppb (primary and secondary standards)
- Court ordered deadlines:
  - December 1, 2014 – Proposed revised NAAQS
  - October 1, 2015 – Final revised NAAQS
- Not expected to be an independent driver of controls at either plant

Overview of Environmental Issues – Clean Power Plan

Clean Power Plan:

- June 2015 Proposed Rule
- August 3, 2015 Final Rule issued along with:
  - Final New Source Performance Standards
  - Proposed Federal Plan
- Still under review

	Proposed interim rate	Final Rule interim rate	Proposed Final rate	Final Rule final rate
AR	968	1304	910	1130

Overview of Environmental Issues – Clean Power Plan

Clean Power Plan Timeline

Summer 2015	• August 3, 2015 - Final Clean Power Plan
1 Year	• September 6, 2016 – States make initial submittal with extension request or submit Final Plan
3 Years	• September 6, 2018 - States with extensions submit Final Plan
7 Years	• January 1, 2022 - Compliance period begins
15 Years	• January 1, 2030 - CO_2 Emission Goals met

Questions / Comments

BREAK

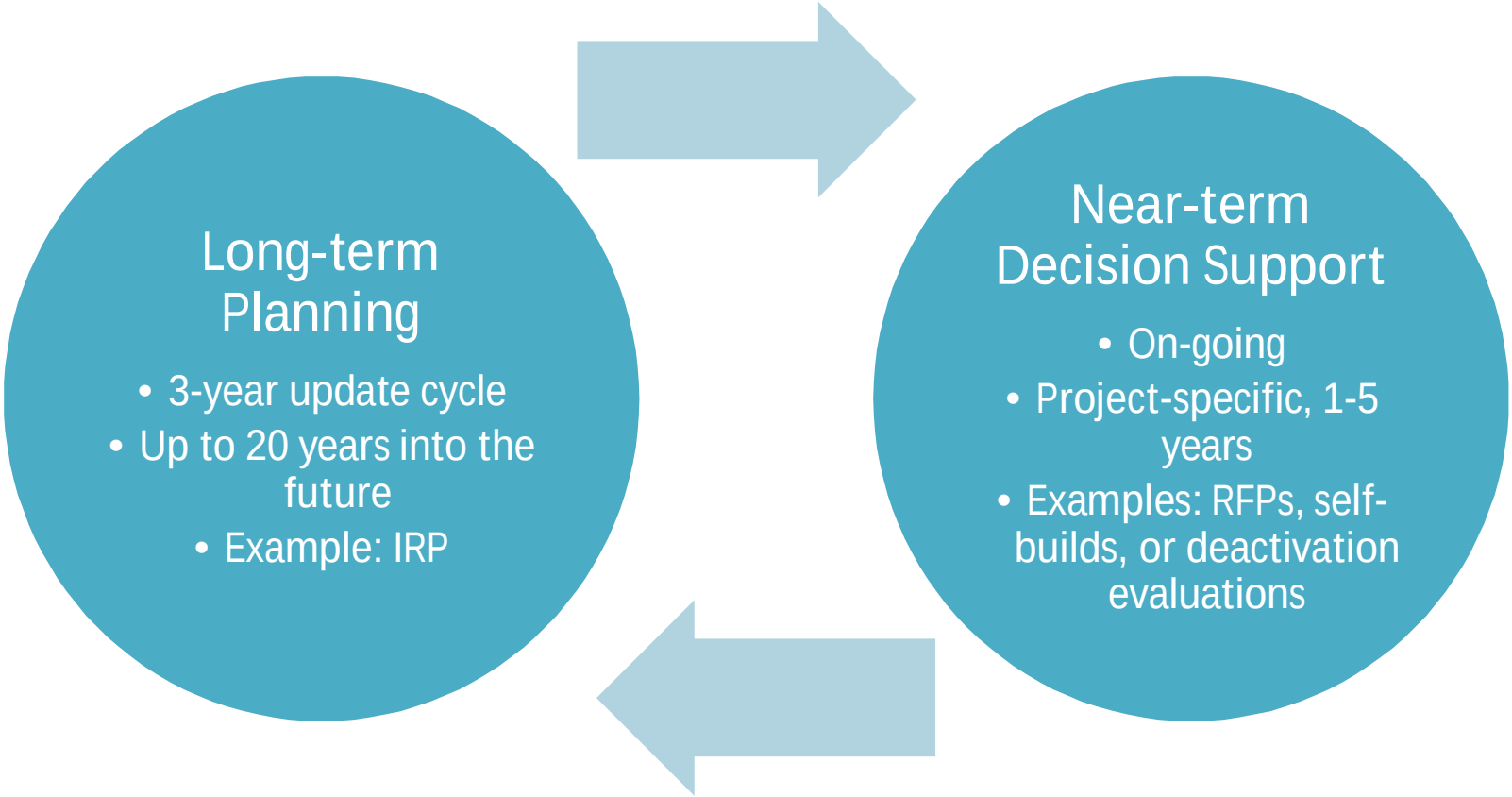
IRP Process Overview

Agenda

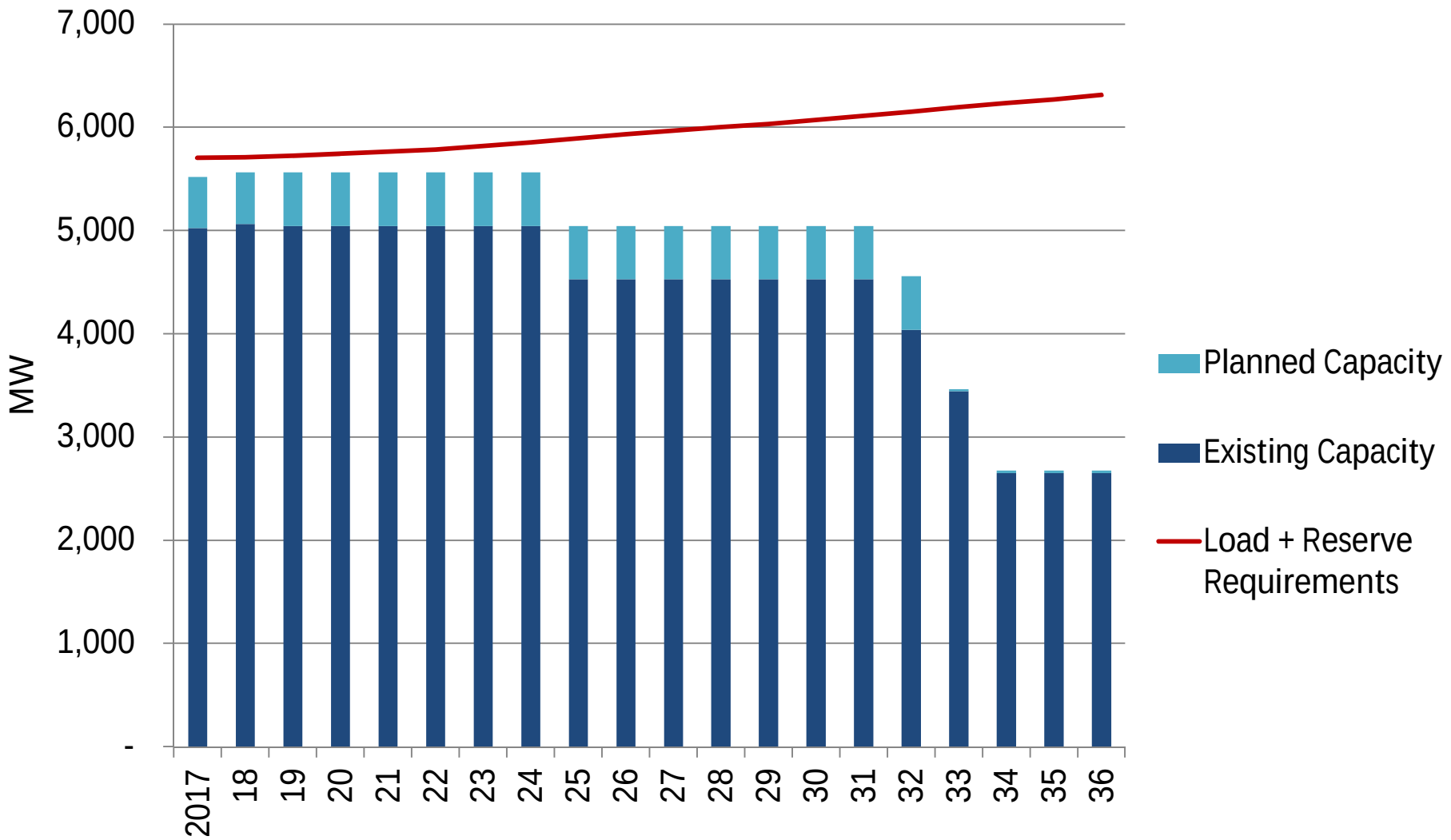
Topic	Start Time	Name
Introduction and Meeting Objectives	8:00	Kurt Castleberry
Resource Planning Update	8:15	Matt Wolf
Transmission Planning Update	8:45	Melinda Montgomery
Demand-side Management Update	9:00	Richard Smith
Overview of Environmental Issues	9:30	Kelly McQueen
Break	*10:00*	
IRP Process Overview	10:10	Kandice Fielder
Generation Technology Assessment	10:25	Charles DeGeorge
Sales and Load Forecasts	10:50	Charles John
Preliminary Results and Next Steps	11:15	Kandice Fielder
Lunch	*12:00*	
Stakeholder Committee Formation	1:00	Kandice Fielder
Wrap-up	1:45	Kurt Castleberry

Resource Planning Process

The IRP has an important role in EAI's resource planning by providing guidance on long-term themes and tendencies. However, the nature of the IRP analysis is not appropriate for tactical resource decisions, which follows a separate evaluation process.



EAI's Future Capacity Needs



Questions / Comments

Generation Technology Assessment

Technology Assessment Process & Overview

- An understanding of generation technology cost and performance is a necessary input to planning and decision support activities. EAI has engaged ESI to monitor and assess generation alternatives on an ongoing basis. This analysis uses EAI' capital structure.

- The process has two main steps. First a screening level analysis is performed and then a detailed analysis is performed.

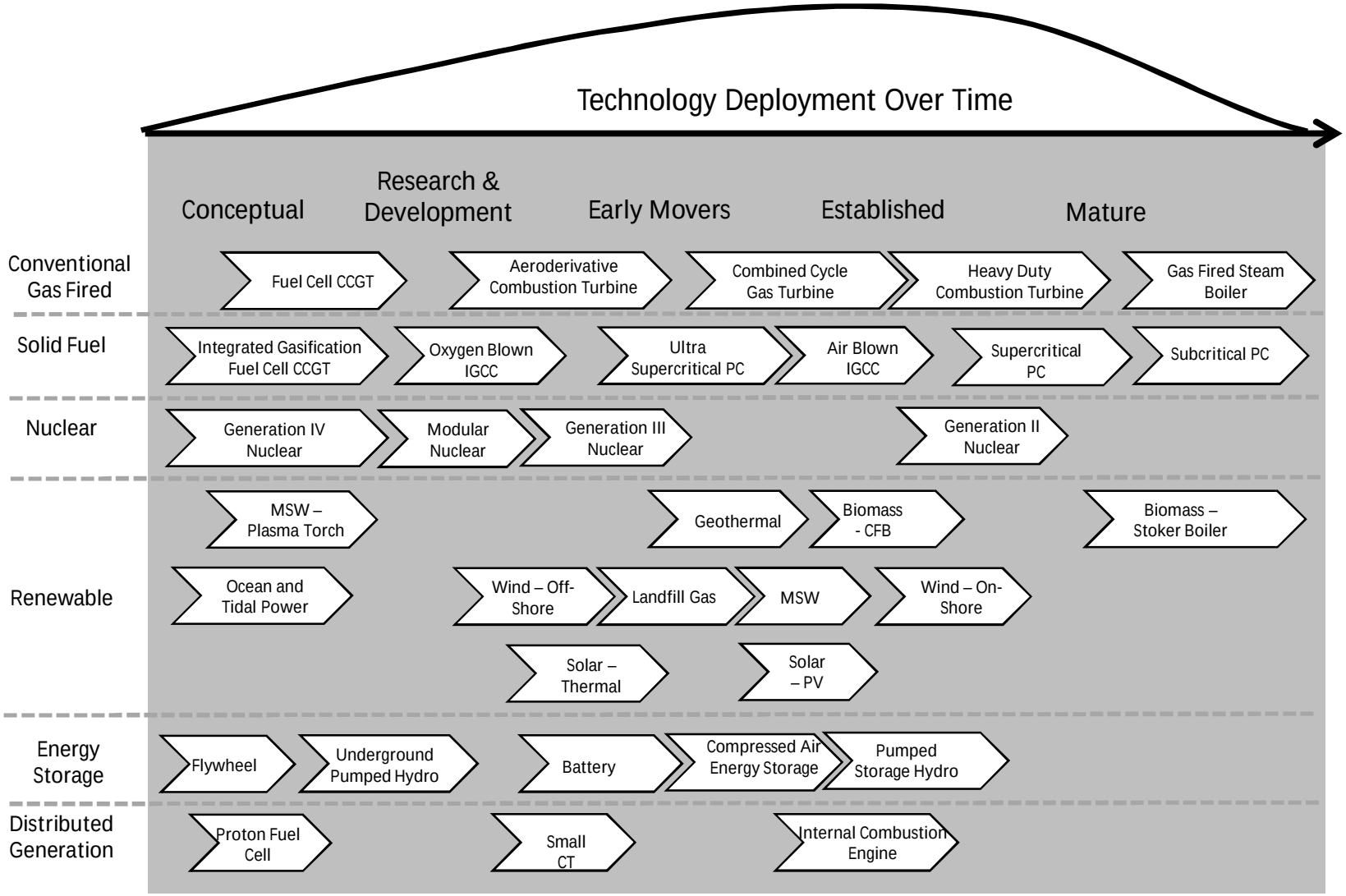
- The 2015 Generation Technology Assessment began by surveying available central state electricity generation technologies, generally those that are two megawatts or greater. The objective is to identify a reasonably wide range of generation technologies. The initial list was subject to a screening analysis to identify technologically mature alternatives which could be reasonably expected to be operational in or around the Entergy regulated service territory, except as otherwise noted.

- EAI prefers technologies that are proven on a commercial scale. Some technologies identified in this document lack the commercial track record to demonstrate their technical and operational feasibility. A cautious approach to technology development and deployment is therefore reasonable and appropriate in order to maintain system reliability and to protect EAI's customers from undue risks. EAI generally does not plan to be the "first movers" for emerging, unproven technologies.

- ESI, through this Technology Screen, has selected certain traditional and renewable generation technology alternatives which may reasonably be expected to meet primary objectives of cost, risk mitigation, and reliability. For each selected technology, Planning Analysis developed the necessary cost and performance parameter inputs into the detailed modeling used to develop the reference technologies comprising the IRP Portfolio.

- ESI will monitor for EAI the technologies eliminated as a result of the initial screen and incorporate changes into future technology assessments and IRPs.

A Variety of Available Alternatives



Technologies Screened

- Pulverized Coal
  - Subcritical Pulverized Coal
  - Supercritical Pulverized Coal
  - Ultra Supercritical Pulverized Coal
- Fluidized Bed
  - Atmospheric Fluidized Bed
  - Pressurized Fluidized Bed
- Integrated Gasification ("IGCC")
  - Oxygen-Blown IGCC
  - Air-Blown IGCC
  - Integrated Gasification Fuel Cell Combined Cycle
- Combustion Turbine / Combined Cycle / Other Natural Gas
  - Combustion Turbine
  - Combined Cycle
  - Large & Small Scale Aeroderivative
  - Steam Boiler
- Fuel Cells
  - Molten Carbonate
  - Solid Oxide
  - Phosphoric Acid
  - Proton Exchange Membrane
  - Fuel Cell Combined Cycle
- Nuclear
  - Advanced Boiling Water Reactor
  - Generation IV
  - Modular Reactors
- Energy Storage
  - Pumped Hydro
  - Underground Pumped Hydro
  - Battery
  - Flywheel
  - Compressed Air Energy Storage
- Renewable Technologies
  - Biomass
  - Solar Photovoltaic (Fixed Tilt and Tracking)
  - Solar Thermal
  - Wind Power
  - Municipal Solid Waste
  - Landfill Gas
  - Geothermal
  - Ocean & Tidal

Technology Assumptions for Combined Cycle Application

Cost & Performance Appropriate For Technology Deployment in MISO South	Units	1x1 F Frame CCGT	2x1 F Frame CCGT	1x1 G Frame CCGT	2x1 G Frame CCGT
Net Max Capacity (Summer)	(MW)	382	764	450	900
Installed Cost, 2014 (Summer)	($/kW)	$1,095	$1,045	$1,100	$900
Full Load Heat Rate (Summer)	(Btu/kWh)	6,900	6,750	6,650	6,650
Typical Capacity Factor	(%)	65%-85%	65%-85%	65%-85%	65%-85%
Fixed O&M (Summer)	($/kW-yr)	$17.50	$15.00	$15.50	$10.00
Variable O&M (Summer)	($/MWh)	$2.00	$2.00	$2.00	$2.00
Inlet Air Conditioning Assumption		Evaporative Coolers			
NOx Control Technology		SCR	SCR	SCR	SCR
NOx emissions, post control	(lbs/MMBtu)	0.01	0.01	0.01	0.01

- Cost of supplemental capacity (duct firing) assumed to be $250/kW
- Max Capacity, Installed Cost, and Fixed O&M include supplemental capacity. Heat rates reflect base capacity only.

Technology Assumptions for Peaking Applications

Cost & Performance Appropriate For Technology Deployment in MISO South	Units	F Frame CT	G Frame CT	Large Aeroderivative CT	Internal Combustion
Net Max Capacity (Summer)	(MW)	194	250	102	18.8
Installed Cost, 2014	($/kW)	$820	$700	$1,275	$1,360
Full Load Heat Rate – Summer	(Btu/kWh)	10,200	9,600	9,125	8,440
Typical Capacity Factor	(%)	0%-10%	0%-10%	0%-40%	0%-40%
Fixed O&M	($/kW-yr)	$3.50	$3.00	$14.25	$29.25
Variable O&M	($/MWh)	$10.00	$12.50	$0.75	$2.25
Inlet Air Conditioning Assumption		-	Evaporative Cooling	Inlet Chillers	-
NOx Control Technology		Dry Low NOx burners	Dry Low NOx burners	SCR	SCR
NOx emissions, post control	(lbs/MMBtu)	0.03	0.03	0.01	0.01

Technology Assumptions for Solid Fuel Application

Cost & Performance Appropriate For Technology Deployment in MISO South		PC With 90% CCS	Nuclear
Net Max Capacity	(MW)	800	1,310
Installed Cost, 2014	($/kW)	$4,900	$8,000
Full Load Heat Rate – Summer	(Btu/kWh)	13,200	10,200
Levelized Fuel Cost	($/mmbtu)	$3.12	$0.90
Typical Capacity Factor	(%)	85%	90%
Fixed O&M	($/kW-yr)	$140.00	$115.60
Charging Cost	($/MWh)	n/a	n/a
Expected Useful Life		40	40

Technology Assumptions for Renewable Applications

Cost & Performance Appropriate For Technology Deployment in MISO South		Biomass	Wind	Solar PV	Battery Storage (Lead Acid Batteries)
Net Max Capacity	(MW)	100	200	100	50
Installed Cost, 2014	($/kW)	$4,760	$2,050	$2,300	$2,400
Full Load Heat Rate – Summer	(Btu/kWh)	12,900	-	-	-
Levelized Fuel Cost	($/mmbtu)	$3.04	-	-	-
Typical Capacity Factor	(%)	85%	48% *	26%	20%
Fixed O&M	($/kW-yr)	$104.60	$22.10	$19.00	$0.00
Charging Cost	($/MWh)	n/a	n/a	n/a	$25.00
Expected Useful Life		30	25	25	20

- Capacity for these technologies is not significantly affected by ambient air temperature.
- All O&M is considered fixed.

* Wind capacity factor representative of resources located in mid-west geographical area.

Additional Supply Considerations

Schedule and location can influence which technology is preferred for a given application

Technology	Time to Market	Environmental	Gas Supply	Flexibility
CCGT	◐	●	◐	◐
Frame CT w/ SCR	◕	●	◐	◐
Small Aeroderivative	●	●	○	◕
Large Aeroderivative	◕	●	○	◕
Internal Combustion Engine	●	◐	●	●
Nuclear	○	◕		○
Coal	◔	○		●
Wind	●	●		○
Solar	●	●		○
Considerations included in category	• Permitting Requirements • Lead time of major components • Engineering Required • Installation Time	• Impact of Non-Attainment Zone • NOx Emissions • SOx Emissions • COx Emissions • Residual Fuel	• Gas Pressure Required	• Ramp Rate • Turndown Ratio • Start Time • Performance at Part Load

Considerations are scored relative to each other ● *Most favorable* ○ *Least Favorable*

Technologies Selected For Detailed Analysis

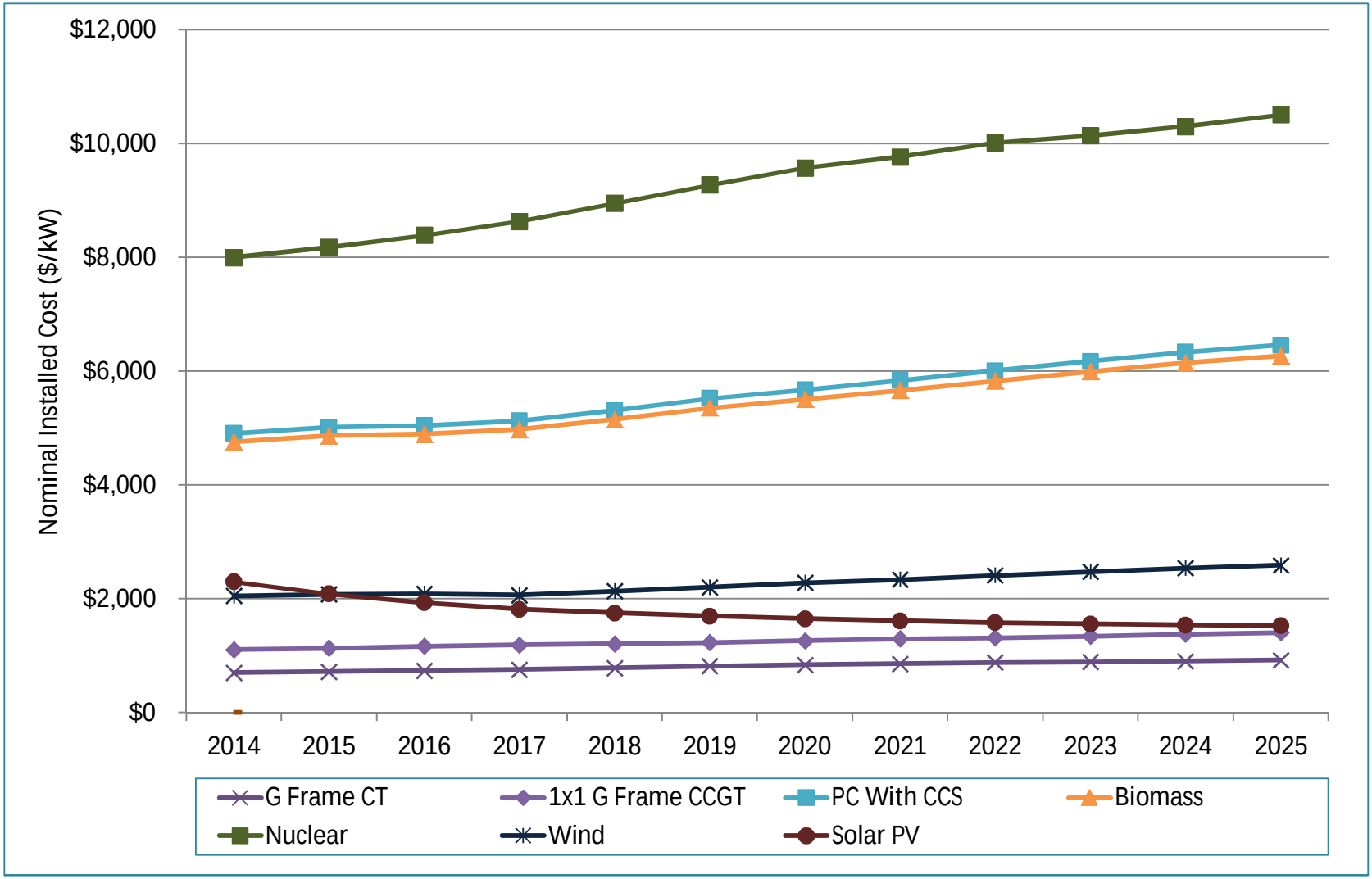
The following technologies are being carried forward for development of detailed planning assumptions and production cost modeling

- Pulverized Coal
  - Supercritical Pulverized Coal with carbon capture and storage*
- Natural Gas Fired
  - Combustion Turbine ("CT")
  - Combined Cycle Gas Turbine ("CCGT")

- Nuclear
  - Advanced Boiling Water Reactor
- Renewable Technologies
  - Biomass
  - Wind Power
  - Solar PV

**Proposed EPA regulations on CO_2 have effectively eliminated all new coal plants without carbon capture.*

Capital Cost Projections



Questions / Comments

Sales and Load Forecasts

Load Forecast Process

- The load forecasting process begins with historical monthly sales volumes
  - 2006 – 2013
  - Theoretically sound, statistically valid

- Calculate a sales forecast using an econometric model meant to determine the relationship between sales, economics, energy efficiency, and weather

- Apply sales forecast and normal weather to regressions to calculate monthly peaks

EAI Load Forecasts for IRP

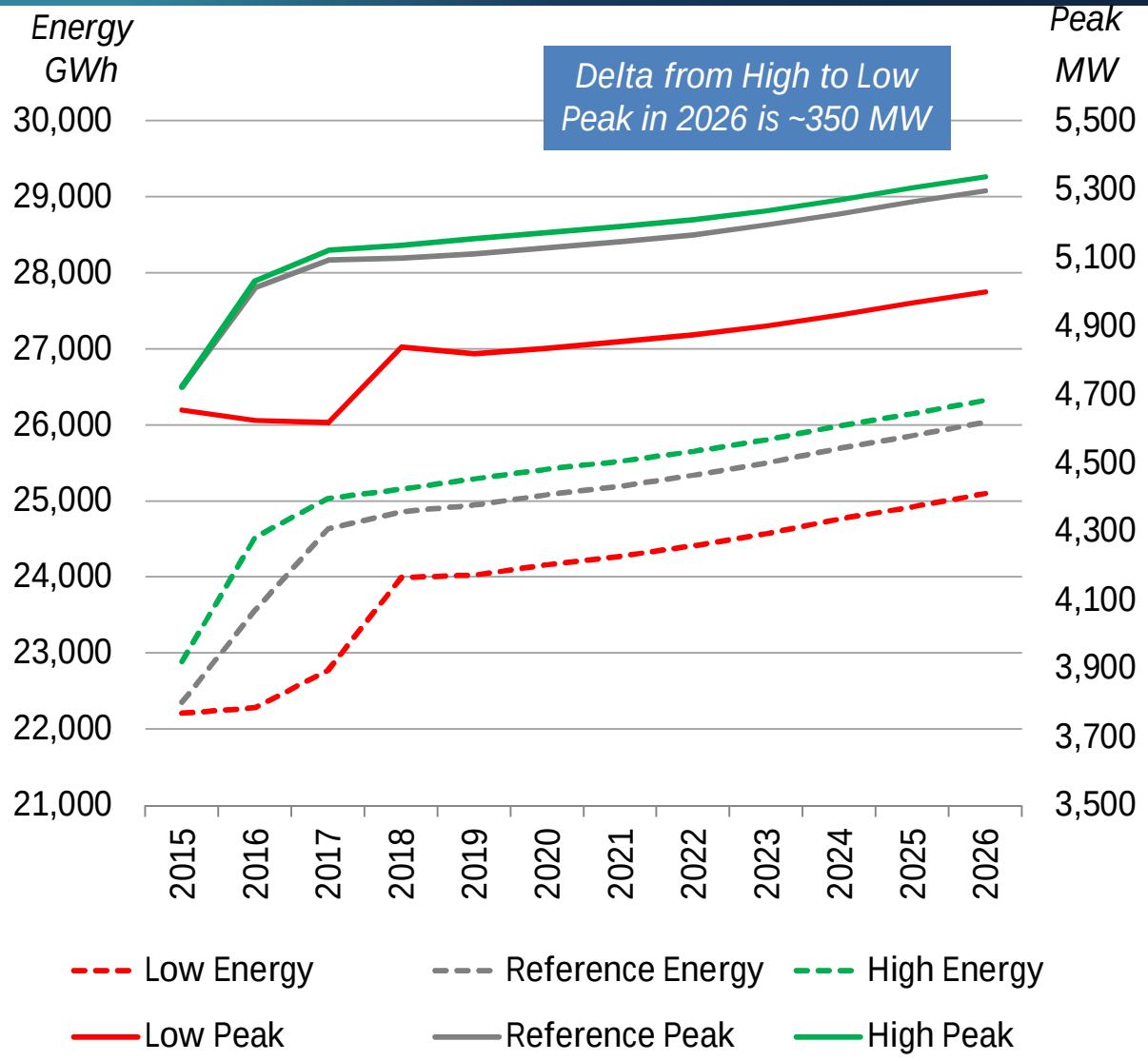
Summary of Results

- Low and High cases driven by scenarios around Economic Development assumptions
- Most of growth is concentrated in the Large Industrial segment

Uncertainties

- On-time completion and/or size of ED projects
- Possible changes to DSM targets

14-24 CAGR	Low	Ref	High
Peak	1.4%	2.0%	2.1%
Energy	1.2%	1.6%	1.7%



Economic Outlook

- The economic outlook for the Entergy region of Arkansas remains healthy.
  - At the time of the IRP load forecast, the 10 year (2014-2024) CAGR for gross state product was 1.8%.
  - The current 10 year CAGR for this same period is 2.0%.

- According to the Federal Reserve, the state's leading index* for May shows expected growth from 0 - 1.5%. For reference, the leading indices for Oklahoma and Louisiana are negative.

- Federal energy efficiency standards – particularly concerning lighting, refrigeration, and furnaces – will continue to put downward pressure on usage per customer, primarily in the residential and commercial sectors.

- The success of EAI's energy efficiency programs is expected to continue which will further dampen peak demand.

** Measure of non-farm payroll, unemployment, wages, and average hours worked in manufacturing; Published by the Philadelphia Fed*

Questions / Comments

Preliminary Results and Next Steps

The 2015 Integrated Resource Plan

The study period for the 2015 IRP is the 20-year period of 2017 through 2036. A 20-year study period was chosen in order for EAI to evaluate long-term trends under a broad range of possible future outcomes.

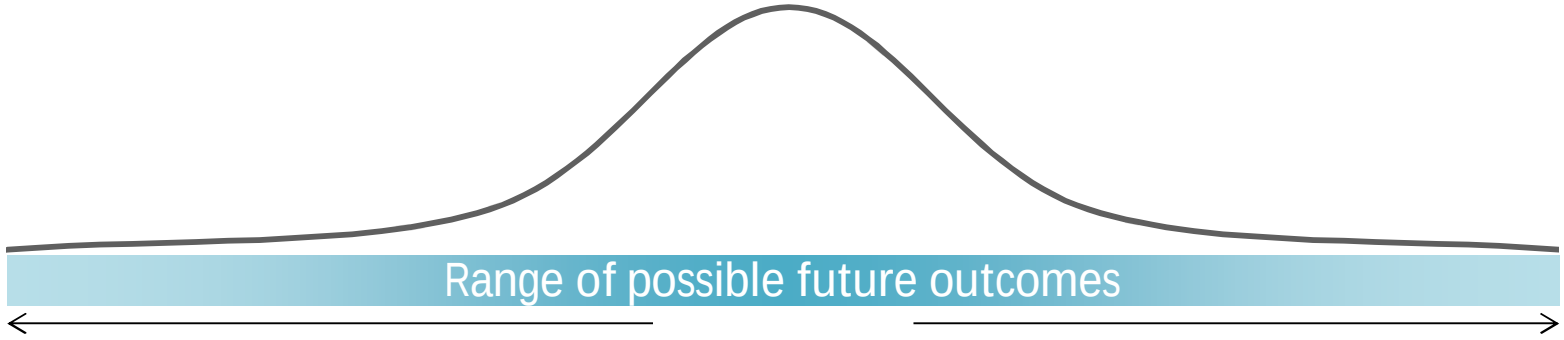
The 2015 IRP will be guided by a set of resource planning objectives EAI originally established to guide its development of its 2012 IRP and to meet the requirements of the APSC Resource Planning Guidelines for Electric Utilities[1]. The planning objectives focus on four key areas:

- cost,
- risk,
- reliability and
- sustainability.

1. Order No. 6 in APSC Docket No. 06-028-R

Broad Range of Uncertainties

EAI is currently facing a broad range of uncertainties that impact resource planning. Some possible combinations of future outcomes will drive a higher need for additional generating resources and some will driver a lower need. The IRP reasonably bookends this range of possible outcomes.

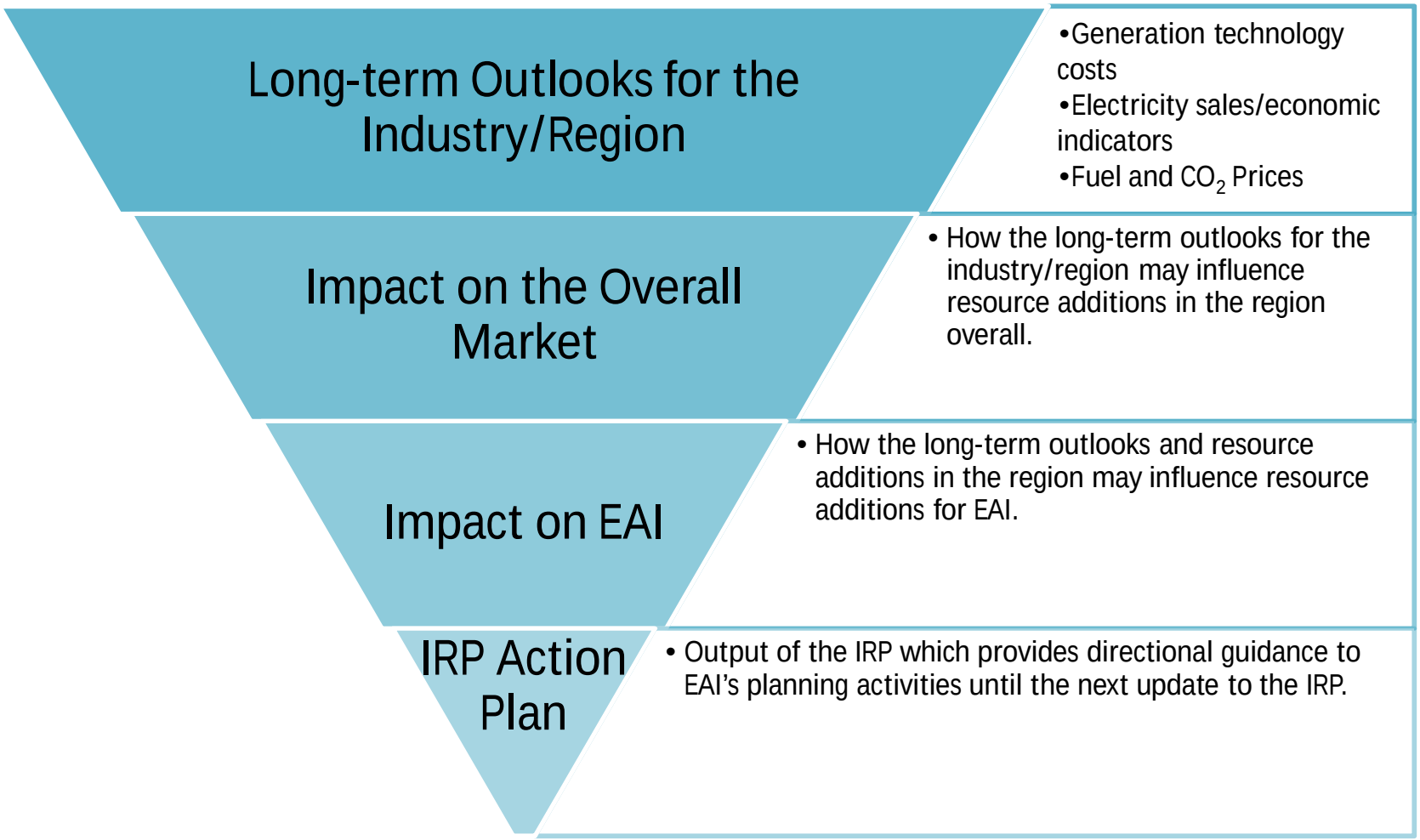


Low sales growth
Low fuel prices
No CO_2 price
Extended availability of existing units

Expected Case

High sales growth
High fuel prices
High CO_2 price
Reduced availability of existing units

Development of the IRP



Futures-based Approach

For the IRP to reasonably account for a broad range of uncertainty while focusing on an appropriate amount of meaningful, thoughtful modeling iterations, EAI Resource Planning is using a futures-based approach to the IRP analysis.

In this approach, three “futures” were developed that represent different combinations of possible outcomes of many variables.

Major areas of uncertainty to consider:

- Sales and load growth,
- Commodity price trends,
- Environmental regulation and/or legislation.

Future 1 – Reference Case

Future 1 represents EAI's Reference Case, or mid-point, of the range of uncertainties.

White Bluff and Independence	- Assume the currently proposed Regional Haze FIP - Install scrubbers in 2021 - Continue to use coal through end of 60-year useful life
CCGT Units	Assume 30-year useful life
Electric Sales & Load Forecasts	Reference Case
Henry Hub Natural Gas Price Forecast*	$4.89/MMBtu
Coal Price Forecast*	$2.46/MMBtu (volume weighted average for EAI units)
CO_2 Price Forecast*	$10.02/short ton; pricing begins in 2020

*2015$, levelized for the period 2017-36

Future 2 – Low Capacity Additions Case

Future 2 represents EAI's Low Capacity Additions Case, which bookends the lower end of the range of uncertainties in terms of assumptions that would drive the least amount of incremental capacity needs.

White Bluff and Independence	- Assume the currently proposed Regional Haze FIP - Install scrubbers in 2021 - Continue to use coal through end of 60-year useful life
CCGT Units	Assume CCGTs are available and operating through the end of the IRP study period
Electric Sales & Load Forecasts	Low Case
Henry Hub Natural Gas Price Forecast*	$3.50/MMBtu
Coal Price Forecast*	$2.20/MMBtu (volume weighted average for EAI units)
CO_2 Price Forecast*	No price for CO_2 throughout IRP study period

*2015$, levelized for the period 2017-36

Future 3 – High Capacity Additions Case

Future 3 represents EAI's High Capacity Additions Case, which bookends the higher end of the range of uncertainties in terms of assumptions that would drive the highest amount of incremental capacity needs.

White Bluff and Independence	- Approval of plan to cease using coal at White Bluff by a time certain (2028) that makes scrubber installation economically unsupportable under federal air regulations, and thus not required. - Final FIP does not require Independence scrubber installation; assumption that similar controls are required in later Regional Haze planning period (2028-38)
CCGT Units	Assume 30-year useful life
Electric Sales & Load Forecasts	High Case
Henry Hub Natural Gas Price Forecast*	$7.68/MMBtu
Coal Price Forecast*	$3.67/MMBtu (volume weighted average for EAI units)
CO_2 Price Forecast*	$29.68/short ton; pricing begins in 2020

*2015$, levelized for the period 2017-36

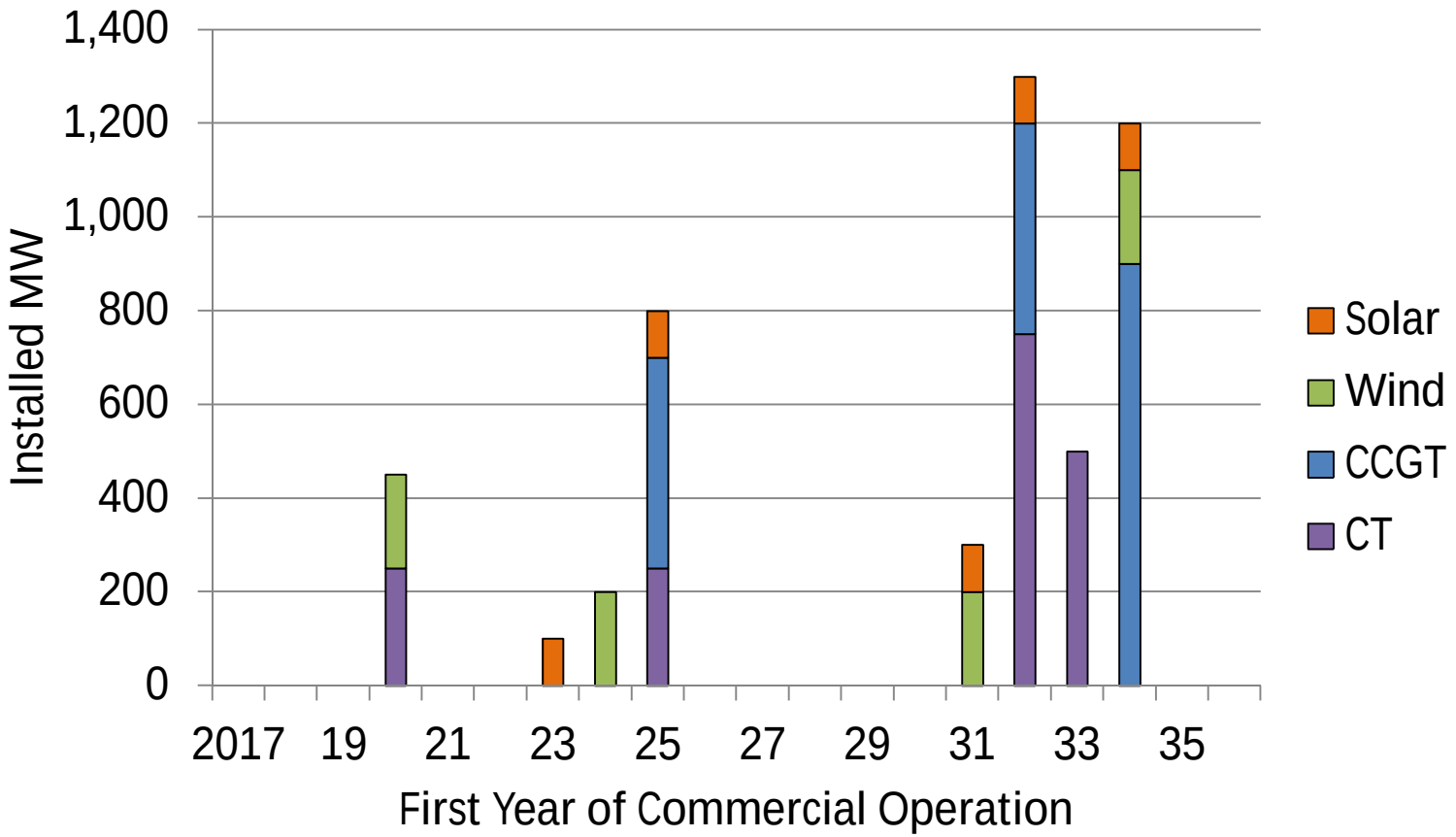
AURORA Portfolio Optimization

For each future, the AURORA Portfolio Optimization tool will select (i.e., output) a 20-year resource portfolio that is economically optimal for EAI under that set of circumstances.

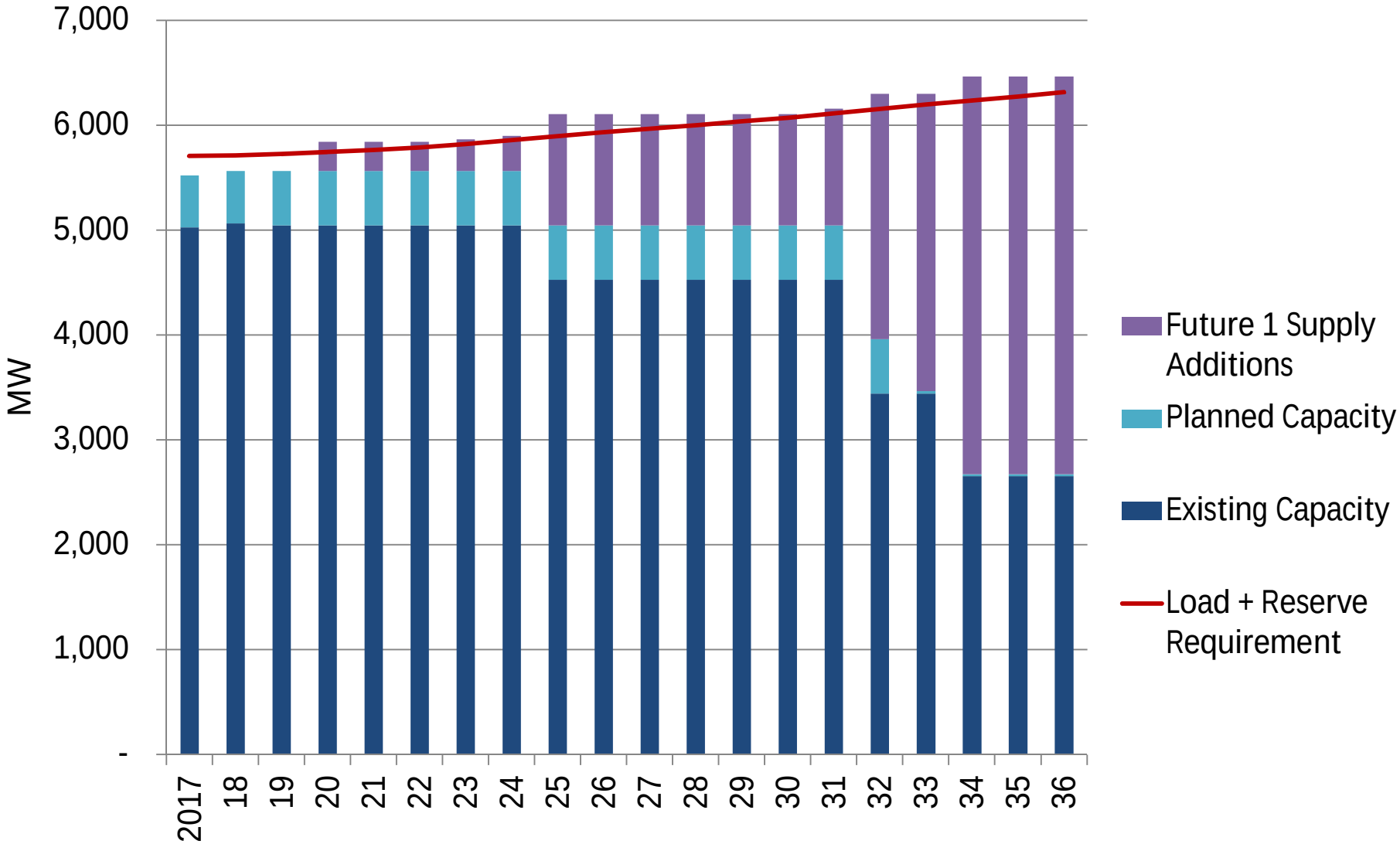
The model adds incremental generating resources whenever needed in order to maintain the target reserve margin (12% of EAI peak load). The model selects the resource alternative that is most valuable in the market.

The following slides show the incremental supply additions select by the AURORA Portfolio Optimization tool as well as the Load and Capability for each future. The model results show installed capacity and the Load and Capability shows effective capacity. The effective capacity is 25% for solar resources, 14.7% for wind resources and 100% for CT and CCGT resources.

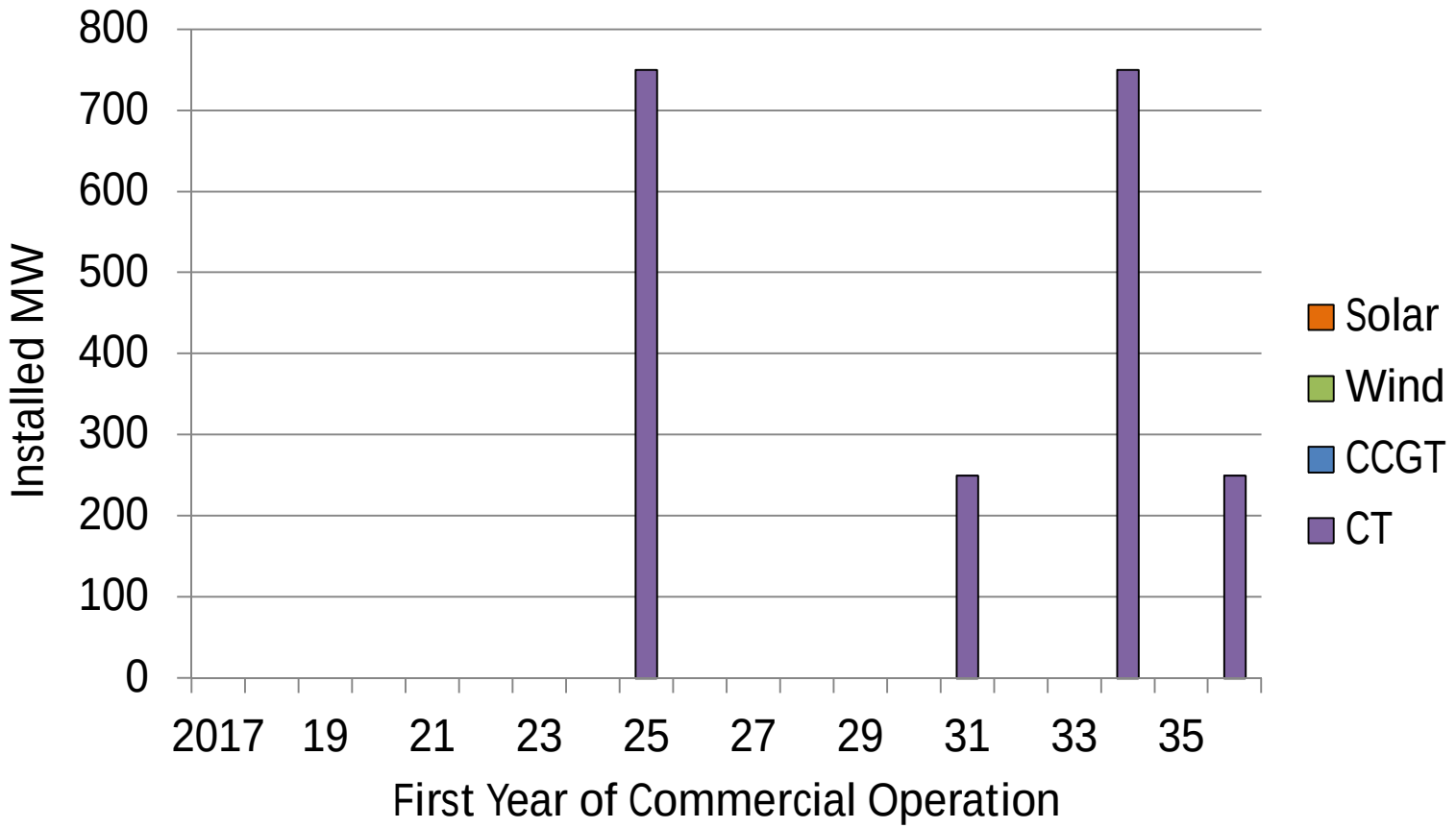
Future 1 – Portfolio Optimization Model Results



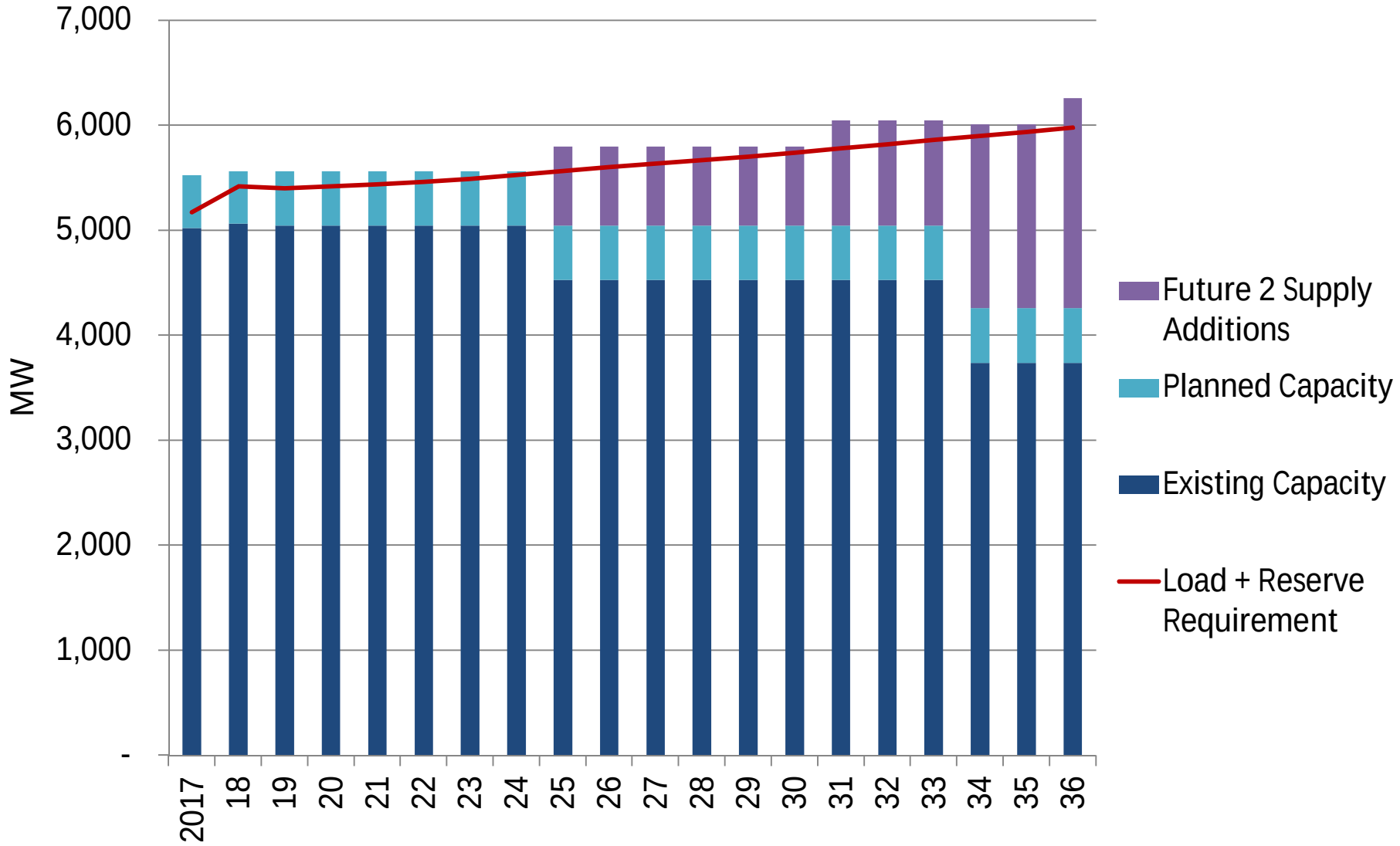
Future 1 – Load & Capability Position



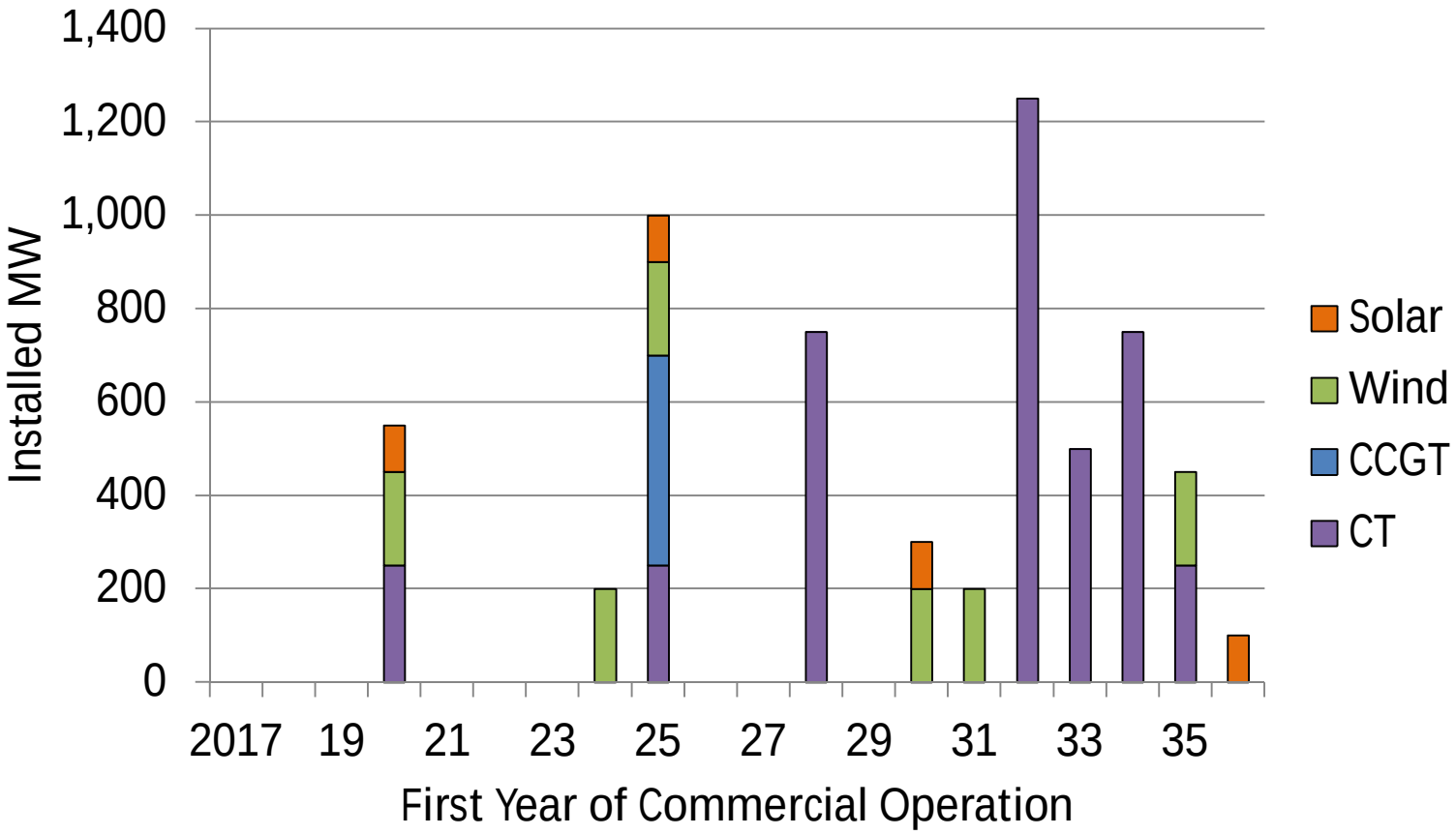
Future 2 – Portfolio Optimization Model Results



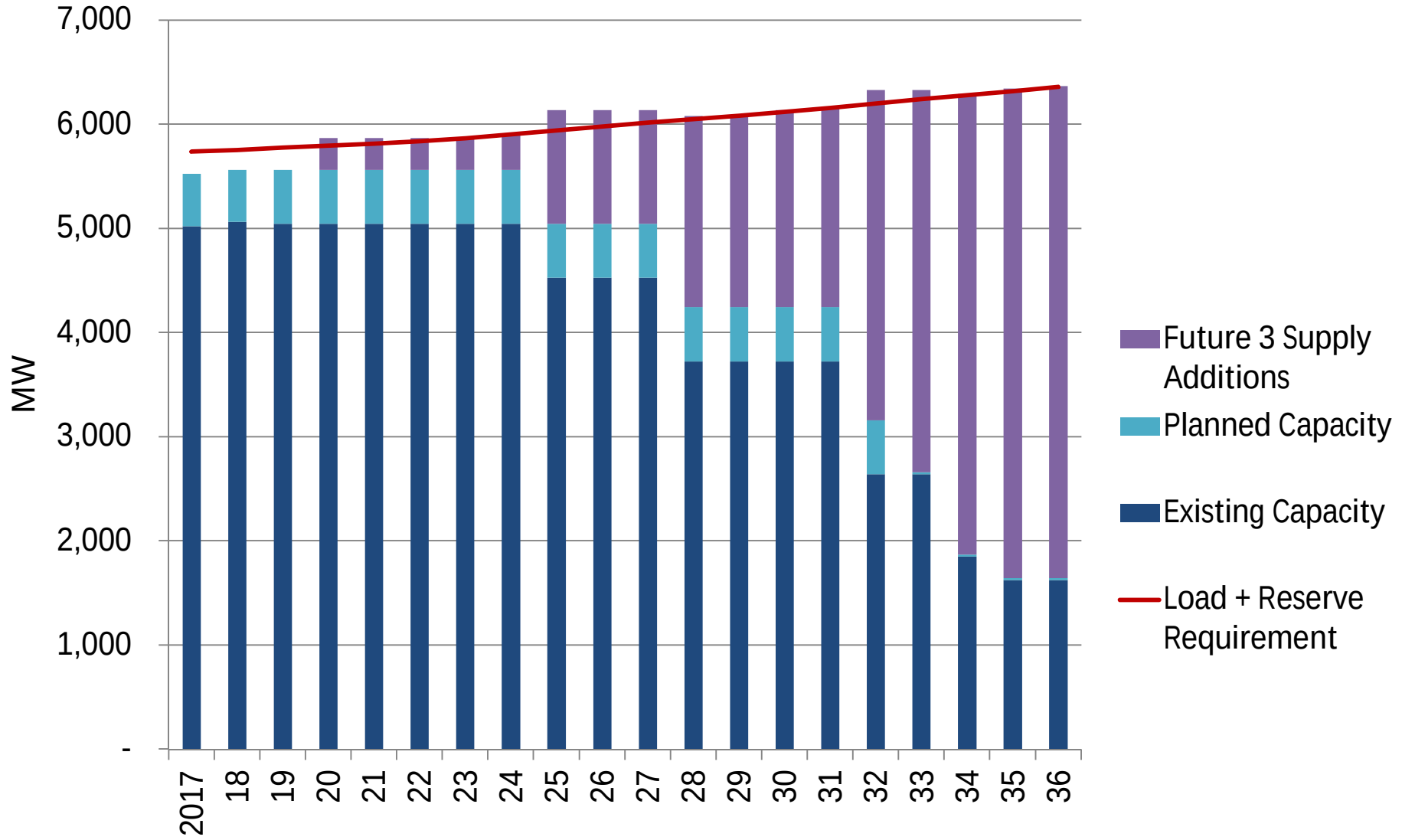
Future 2 – Load & Capability Position



Future 3 – Portfolio Optimization Model Results



Future 3 – Load & Capability Position



Summary of Model Results

While facing a broad range of uncertainty, the EAI IRP analysis reasonably bookends the future and provides a set of data points for EAI Resource Planning to evaluate.

Observations of long-term trends within and between the futures will guide the development of EAI's 2015 IRP Action Plan which will outline actions for the next one to three years.

2017-36	Future 1	Future 2	Future 3
Total Incremental Installed Capacity	4,850 MW	2,000 MW	6,050 MW
CT/CCGT Capacity Additions	73.2%	100%	73.6%
Renewable Capacity Additions	26.8%	0%	26.4%
Incremental Capacity Additions Begin	2020	2025	2020
Load + Reserve Requirements in First Year of Capacity Addition	5,743 MW (2020)	5,564 MW (2025)	5,793 MW (2020)

Next Steps in IRP Development

- Engage with stakeholders, as requested, through early October
- Develop 2015 IRP Action Plan
- Receive and review Stakeholder Report
- File IRP Report no later than October 31

After Lunch: Stakeholder Session

Stakeholder Process

After lunch, stakeholders will reconvene in the meeting room. Once the stakeholder group has completed their discussions, they'll notify the Entergy group to return to the meeting room.

We'll discuss next steps and answer any remaining questions before adjournment.

Questions / Comments

Wrap-up and Next Steps