



## TEA CWLP IRP Update

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December 18, 2018



### Meeting Objectives for Today

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- TEA Background
- Process Overview
- Scope
- Status Update

OUR MISSION

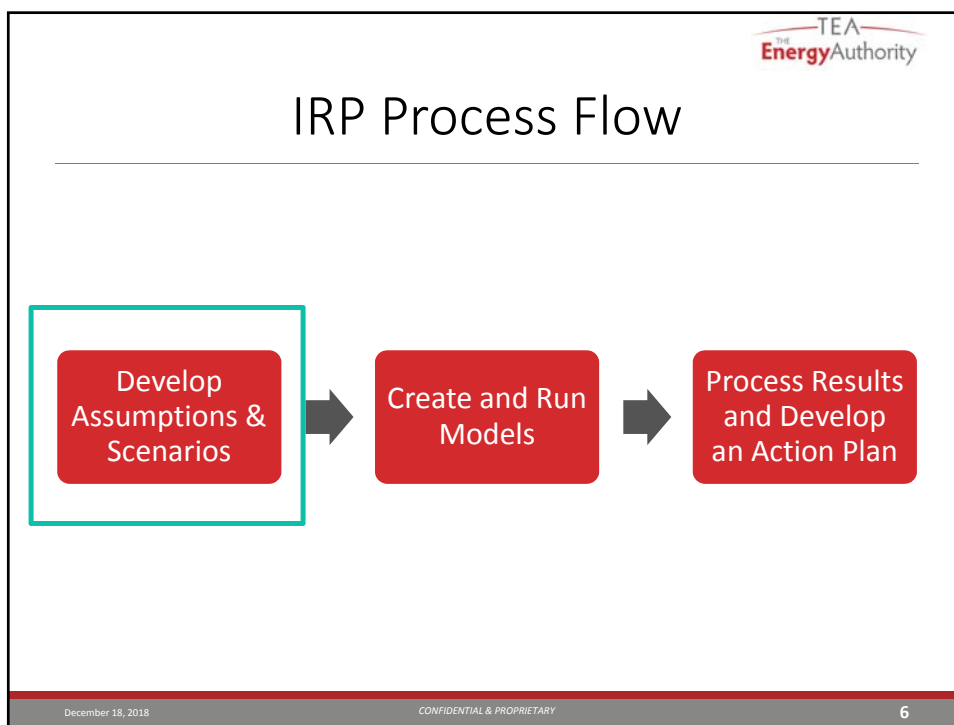


**Maximize** the value of  
your assets in the  
wholesale **energy markets.**



The Energy Authority

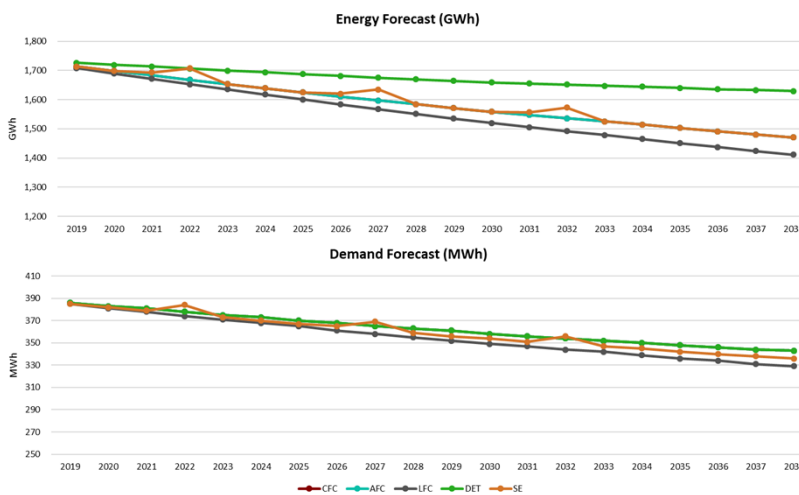




## Develop Assumptions & Scenarios

- Load Forecast
  - More complex inputs
  - Greatly impacted by economic factors
  
- Fuel costs
  - Coal and gas have traded places
  - Renewables are ever-changing
  
- System limitations
  - Transmission limitations
  - Physical and practical realities

## Annual Demand & Energy Forecast



## Develop Assumptions & Scenarios

- Existing units costs
  - Fixed
  - Variable
  - Capital
- Cost projections for new units
- Determining valuable scenarios

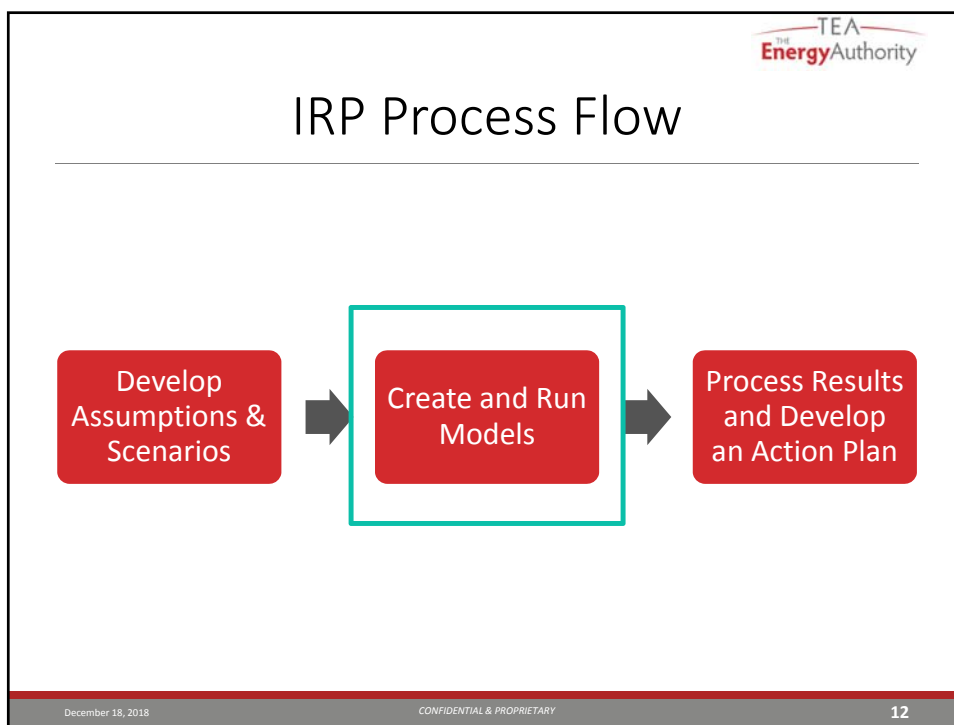
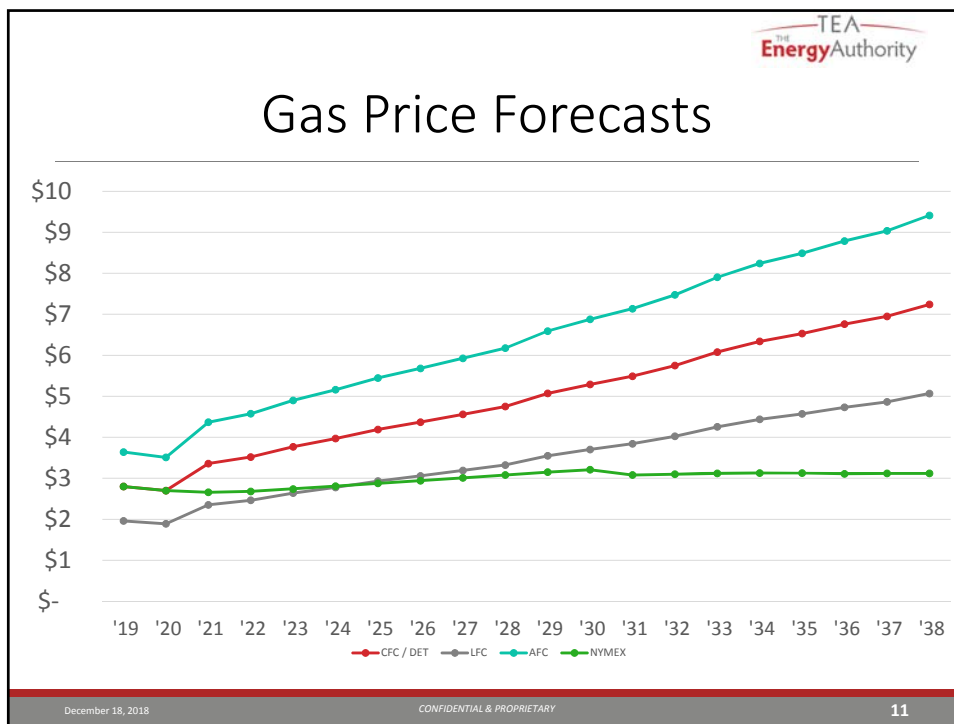
## CWLP Scenarios

### MISO Transmission Expansion Plan Scenarios

- Continued Fleet Change
- Accelerated Fleet Change
- Limited Fleet Change
- Distributed and Emerging Technologies

### Original CWLP Adapted Scenarios

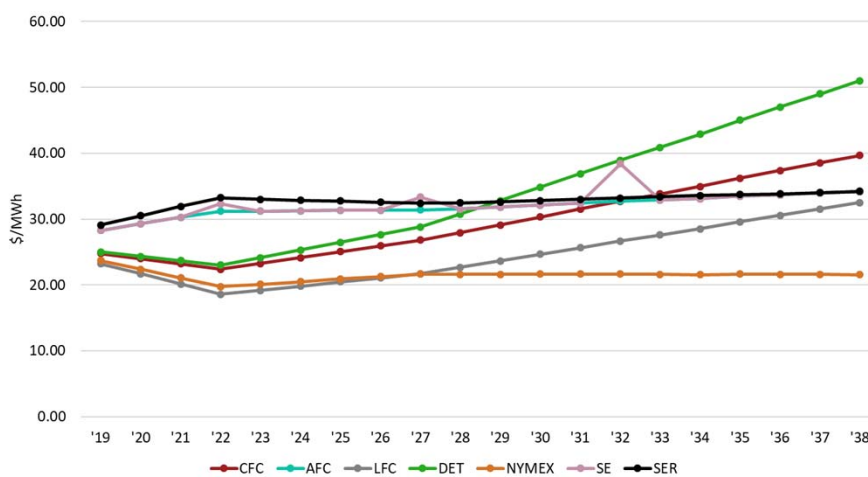
- NYMEX Natural Gas Pricing
- CWLP-Implemented Renewables Requirement
- Seasonal Extremes
- Stricter Environment Regulations
- High Coal Price

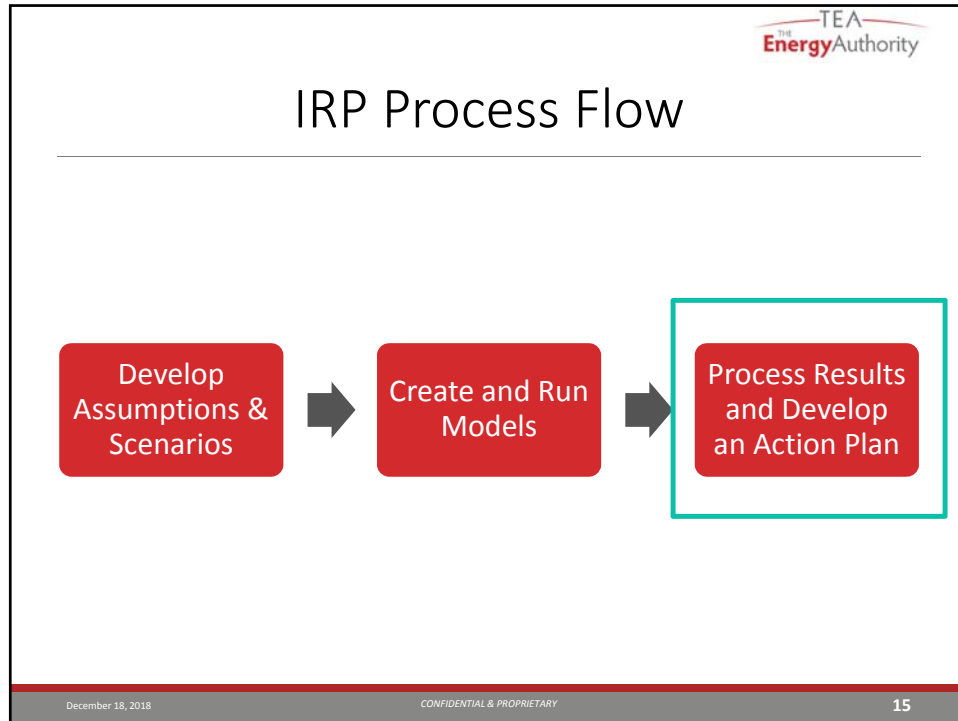



## Create and Run Models

- Creation of models
- Price stream development
- Run scenarios

## CWLP Node Market Price Forecast







## Process Results and Develop Action Plan

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- Post processing and aggregation of all scenario outcomes
- TEA develops outcome and makes a recommendation based on study results
- CWLP applies their own individual utility risk tolerance and goals
- CWLP develops an action plan

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## Sample Output

Scenario	Build Unit Type X	Build Unit Type Y	Retire Unit Z	Implement Energy Efficiency	Sign Renewable PPA
Scenario 1		x	x	x	x
Scenario 2		x	x	x	x
Scenario 3	x		x		
Scenario 4	x		x	x	
Scenario 5	x	x	x	x	x
Scenario 6		x	x	x	x
Scenario 7		x	x	x	x
Scenario 8		x		x	x

Chart is intended to be illustrative , but not representative of actual CWLP results

## Key Preliminary Takeaways

- Coal plants are becoming more expensive to operate and maintain
- Renewables prices are low enough to be a viable alternative to traditional thermal generation
- Fracking has completely changed the natural gas market
- CWLP's load is expected to continue to decline

## Status Update

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- Original scenario study modeling is complete
- Draft outcomes have been reviewed with CWLP
- Additional scenarios are underway with potential for more analysis to follow
- TEA recommends CWLP issue a renewables Request for Proposal prior to the end of the full IRP process

Questions?

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