



***GENERATION PLANNING
SIMULATION
KEY ASSUMPTIONS***

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Informational Update

AGENDA



- **SIMULATION:**
 - **PURPOSE**
 - **HOW IT WORKS**
 - **KEY ASSUMPTIONS**

SIMULATION



- Purpose
 - High-level, screening spreadsheet
 - Simplified planning tool leveraging historical data to illustrate key planning concepts
 - Generate discussion on future generation mix possibilities
 - Achieve familiarization with a small number of generation planning variables
- Limitations
 - This simulation tool is based on historical data; the tool does not include forward-looking data
 - There are other important factors that would be needed for detailed generation mix assessment

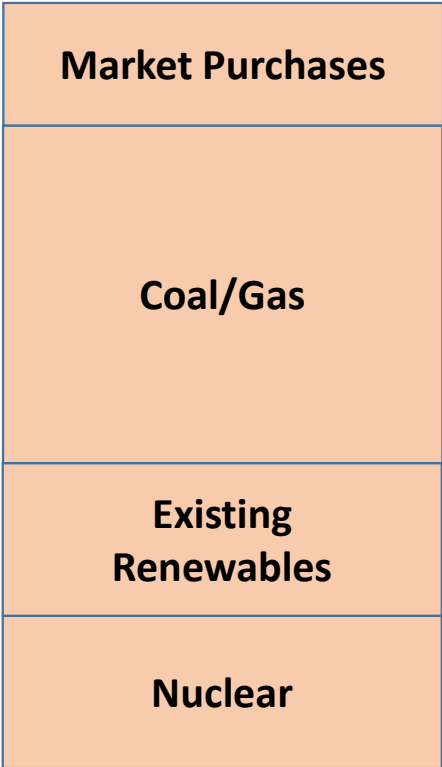
SIMULATION

HOW IT WORKS

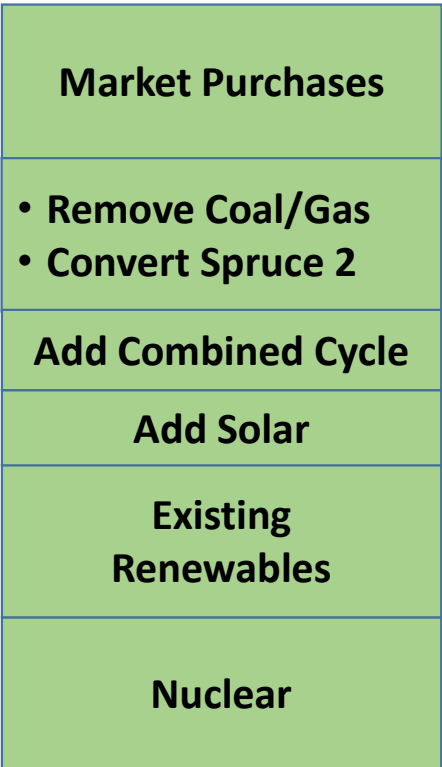
Historical Demand
(Does Not Change)



Historical Supply
(Does Not Change)



“Transition Case” Supply
(Includes Changes)



Historical Results
(Does Not Change)

- Fuel Cost
- Power Purchase Agreements Cost
- Market Purchases Cost
- CO2 Emissions

“Transition Case” Results
(Includes Changes)

- Fuel Cost
- Power Purchase Agreements Cost
- Market Purchases Cost
- CO2 Emissions

SIMULATION

KEY ASSUMPTIONS (PAGE 1 OF 4)



- For transition case, estimations are calculated for:
 - Annual fuel costs, power purchase agreements costs, market purchase costs, & CO2 emissions
 - Transition case is compared to the historical (actual) generation mix over the last 4 calendar years (2018 to 2021)
 - High-level residential monthly bill impact is included
- Historical customer demand is the same in all steps
- Historical generation & transition case are dispatched daily to grid market price
- Forecast includes ERCOT Ancillary Services* as a use of capacity

* Ancillary Services are products used by ERCOT to maintain grid reliability minute-by-minute, 365 days per year.

SIMULATION

KEY ASSUMPTIONS (PAGE 2 OF 4)



- Key year-over-year changes:
 - 2018 – Deely units online
 - 2019 – Deely units retired
 - 2020 – First year of the pandemic
 - 2021 – Winter Storm Uri
 - 2018 to 2020 – Natural Gas prices decline, then rise in 2021
- 2021 Winter Storm Uri impact can be switched on or off
 - One week of extreme gas fuel cost & market prices is smoothed to the prior week
 - Allows comparison to prior 3 years
- Fuel cost is the sum of gas & coal
 - Nuclear fuel cost is the same in all scenarios and there are zero CO2 emissions
 - Nuclear fuel cost is not included due to confidentiality

SIMULATION

KEY ASSUMPTIONS (PAGE 3 OF 4)



- Power purchase agreements cost category contains existing renewables, new solar & new combined cycle costs
- Existing renewable energy price range is \$63 to \$64/MWh (annual aggregated)
- New solar price is \$24/MWh (Source: Department of Energy)
 - Existing solar hourly profile used
- New combined cycle all-in cost is \$45/MWh (Source: Lazard Report, Oct. 2021)
- Market purchases: Used ERCOT day-ahead average price for each day in history

SIMULATION

KEY ASSUMPTIONS (PAGE 4 OF 4)



- Spruce 2 gas conversion capital cost (\$48M) assumed to be netted with avoided capital cost of future coal scrubber water treatment upgrade (\$58M)*
- Spruce 2 gas conversion daily generation profile is the same as historical Sommers 1 gas steam unit (similar technologies)
- 50 MW battery storage (from FlexPOWER Bundle) not included
 - Does not materially impact results
- CO2 emissions from ERCOT market purchases is based on the ERCOT generation mix at 875 lb per MWh
 - CO2 emissions are added to both "Historical" & "Transition" cases
- High-level residential monthly bill impact: Assumes roughly \$0.05 bill impact per \$1 million of additional cost

* Coal scrubber water treatment upgrade is also called "effluent limitation guideline" or "ELG".

Questions?