Duke Energy's New Diverse Generation and Critical Spares

- Agenda
  - Diverse Generation Drivers
    - Regulatory
    - Economic
    - Customer Considerations
  - Investment Risk, Reward, & Diversification Sample Model
  - Duke Energy's Current Portfolio (Regulated)
  - Critical Spares
  - Strategies to reduce Critical Spare Costs

Diverse Generation Drivers

Regulatory Challenges

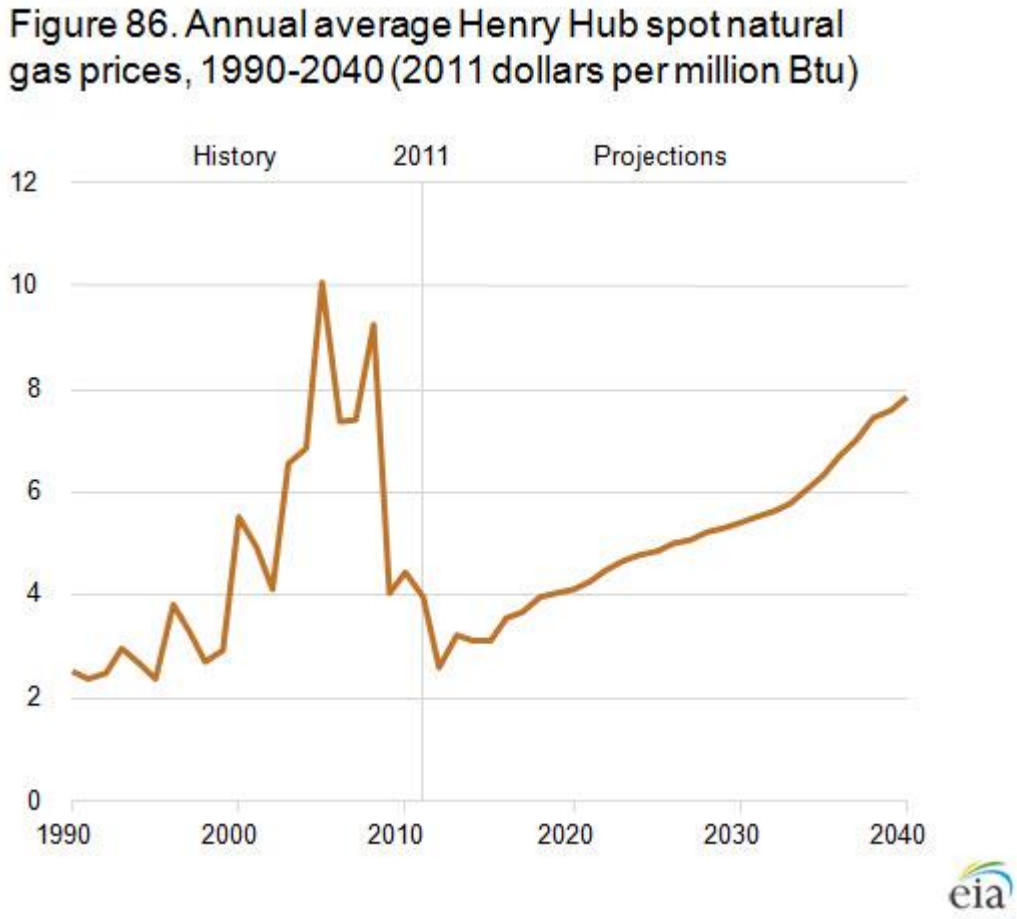
Primary regulations currently affecting the Power Industry

- Air Regulations
  - Mercury and Air Toxic Standards (MATS)
  - Greenhouse Gas (GHG) Rules – CO2 Reduction by 2030 (Current Court Stay)
  - National Ambient Air Quality Standards (NAAQS) – SO2, Ozone, particulate matter (PM2.5)
- Solid Waste Regulations
  - Coal Combustion Residuals (CCR) Rule
- Water Regulations
  - 316(b) Cooling Water Intake Structure Rules
- Renewables
  - States Renewable Energy Mandates (29 States & DC)
- Nuclear Specific
  - Fukushima Flood Response

Diverse Generation Drivers

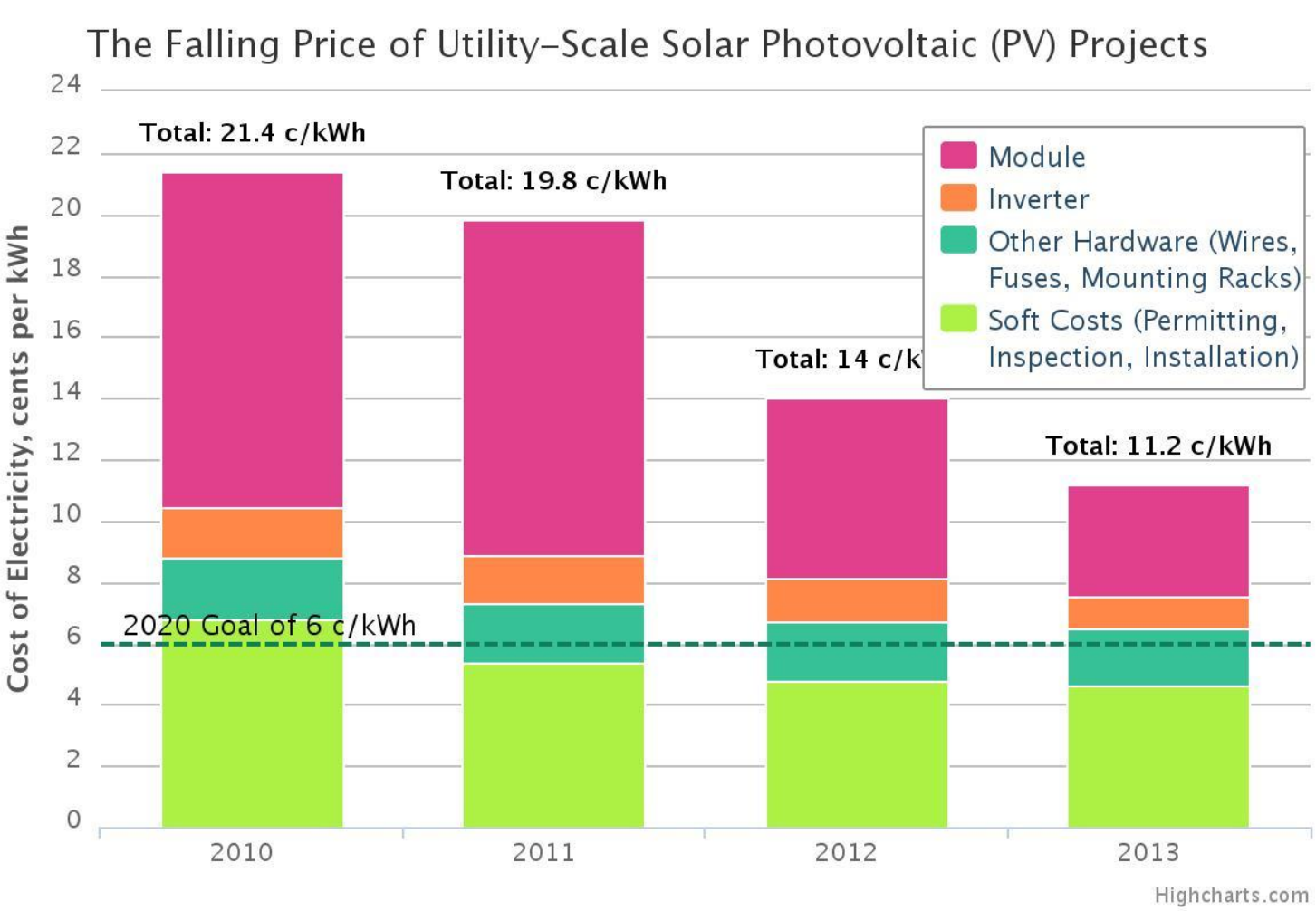
Economic

Natural Gas Price Projections (Spot Price)



Diverse Generation Drivers

Economic – Solar Utility Scale Price Decreases



Diverse Generation Drivers

Customer Considerations

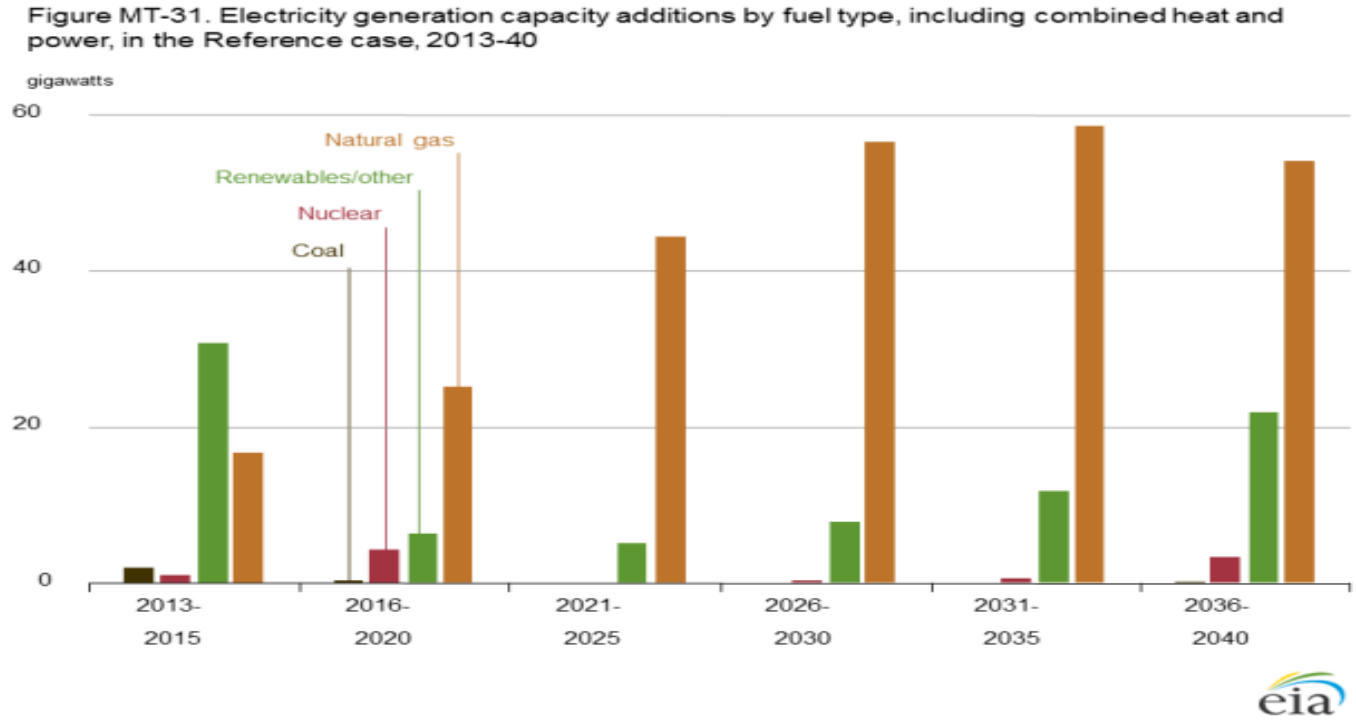
More and more customers are focused on Sustainability and minimizing their environmental footprint.

Google – Powering their Data Center operations with 35% Renewable Energy currently, their goal is for 100% Renewable Energy power

Apple – In 2015, 93% of their Energy Consumption was from Renewable sources, their goal is for 100% Renewable Energy power

Anheuser-Busch – Uses approximately 3,000 solar panels to help power their Newark, NJ operations (supplies about 5% of their power consumption). In Fairfield, CA, they obtain 15% of their power from solar and wind sources

Diverse Generation Predictions



The majority of future demand is predicted to come from two fuel sources: Natural Gas and Renewables

Investment Risk, Reward, and Diversification Sample Model

$1,000 Invested in a Dow Jones Fund Example

Total Investment =	**$1,000**	
Future Economy	Probabilty of Occurrence	*Dow Jones Fund Return*
Recession	20%	($100)
Stable Economy	50%	$100
Expanding Economy	30%	$250
Expected Return =	**$105**	
Risk (+/-) =	**$121**	

Macro Economic Risks not controlled by the Corporation

Investment Risk, Reward, and Diversification Sample Model

$1,000 Invested in a Bear Fund Example

Total Investment =	**$1,000**	
Future Economy	Probabilty of Occurrence	*Bear Fund Return*
Recession	20%	$200
Stable Economy	50%	$50
Expanding Economy	30%	($100)
Expected Return =	**$35**	
Risk (+/-) =	**$105**	

Macro Economic Risks not controlled by the Corporation

Investment Risk, Reward, and Diversification Sample Model

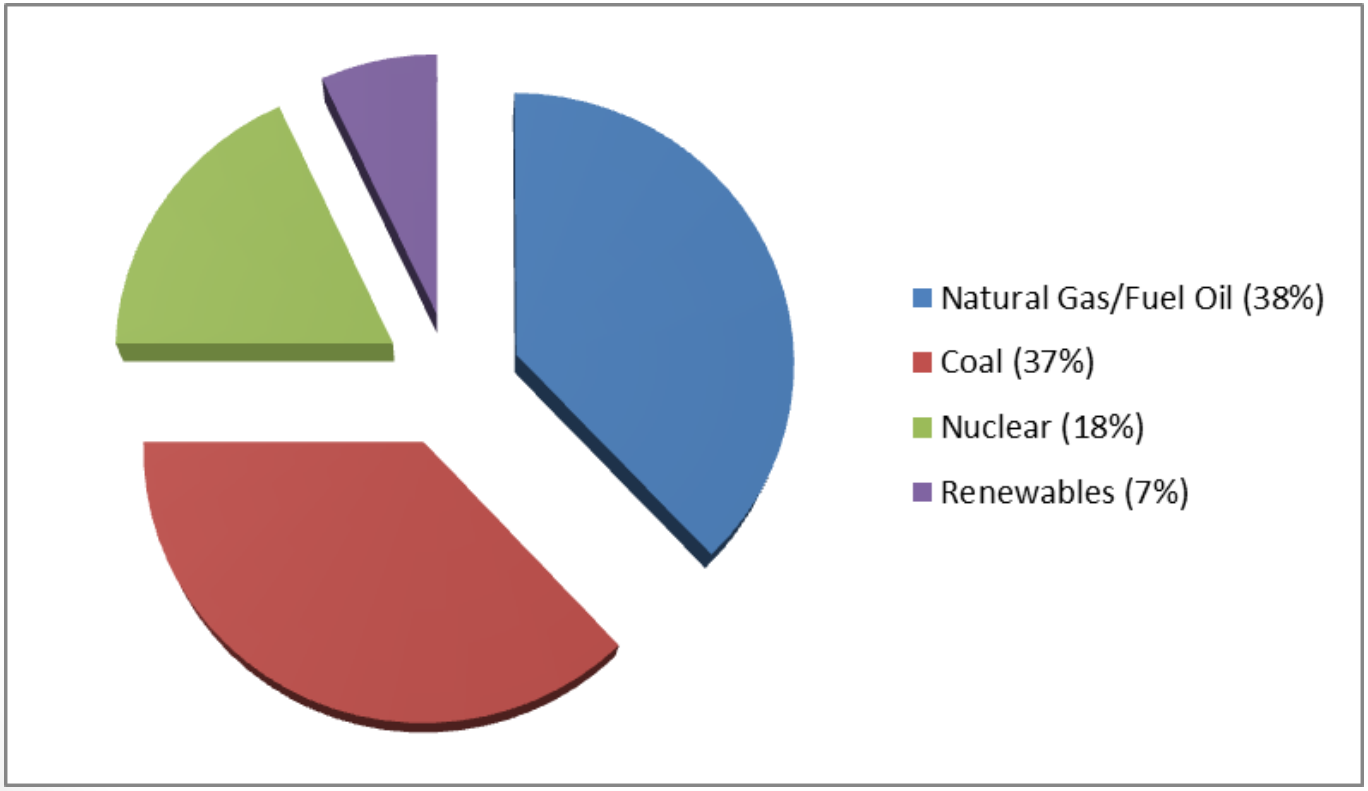
$1,000 Invested in evenly in both a Dow Jones Fund and Bear Fund

Dow Jones Fund	**$500**		
Bear Fund	**$500**		
Future Economy	Probabilty of Occurrence	*Dow Jones Fund Return*	*Bear Fund Return*
Recession	20%	($50)	$100
Stable Economy	50%	$50	$25
Expanding Economy	30%	$125	($50)
Expected Return =	**$70**		
Risk (+/-) =	**$10**		

Macro Economic Risks not controlled by the Corporation

Duke Energy's Current Generation Portfolio (Regulated Utilities)

Generation Diversity (*percent owned capacity as of 12/31/2015*)



Critical Spares

What are Critical Spares?

A select group of materials that are typically classified as capital spares, rotatable spares or emergency spares. These <u>may</u> be capitalized and held in reserve for future use.

Critical Spares

Are Critical Spares/Inventory free to hold at the plants?

No, even though these are Assets on the balance sheet, holding Critical Spares/Inventory has a ongoing cost:

1. Costs for warehouse personnel, space, etc. (incremental perhaps)
2. Property Tax
3. Insurance
4. Regulatory Lag (*where Inventory is allowed in the Rate Base for Regulated Utilities*)
5. Finance Cost to purchase
6. Lost Opportunity cost to invest the cash in more profitable endeavors

However, most plants don't see a budget impact "*holding inventory*", only when it is issued and used. Inventory can become an "insurance policy" if not monitored.

Strategies to reduce Critical Spare Costs

Standardize as much as possible – even with a diverse generation mix

Should allow reducing overall Critical Spare needs & costs

Engage the Business Unit or Operational Group and educate them on actual costs to hold inventory and gain alignment at the top

Negotiate Critical Spare costs before awarding Major Equipment Contracts (*particularly with New Generation*)

Push for early Critical Spare delivery and include in the next Rate Base case with the New Generation plant (*reduces Regulatory Lag for those regulated jurisdictions that have Inventory in the rate base*)

Consider the Vendor holding Critical Spares for your needs

Business case should be run to determine the best cost outcome

Utilize Industry Groups like RAPID to help with Critical Spare needs as they arise

Consider joining other groups, like Pooled Inventory Management for Critical Spares