

Power 2020

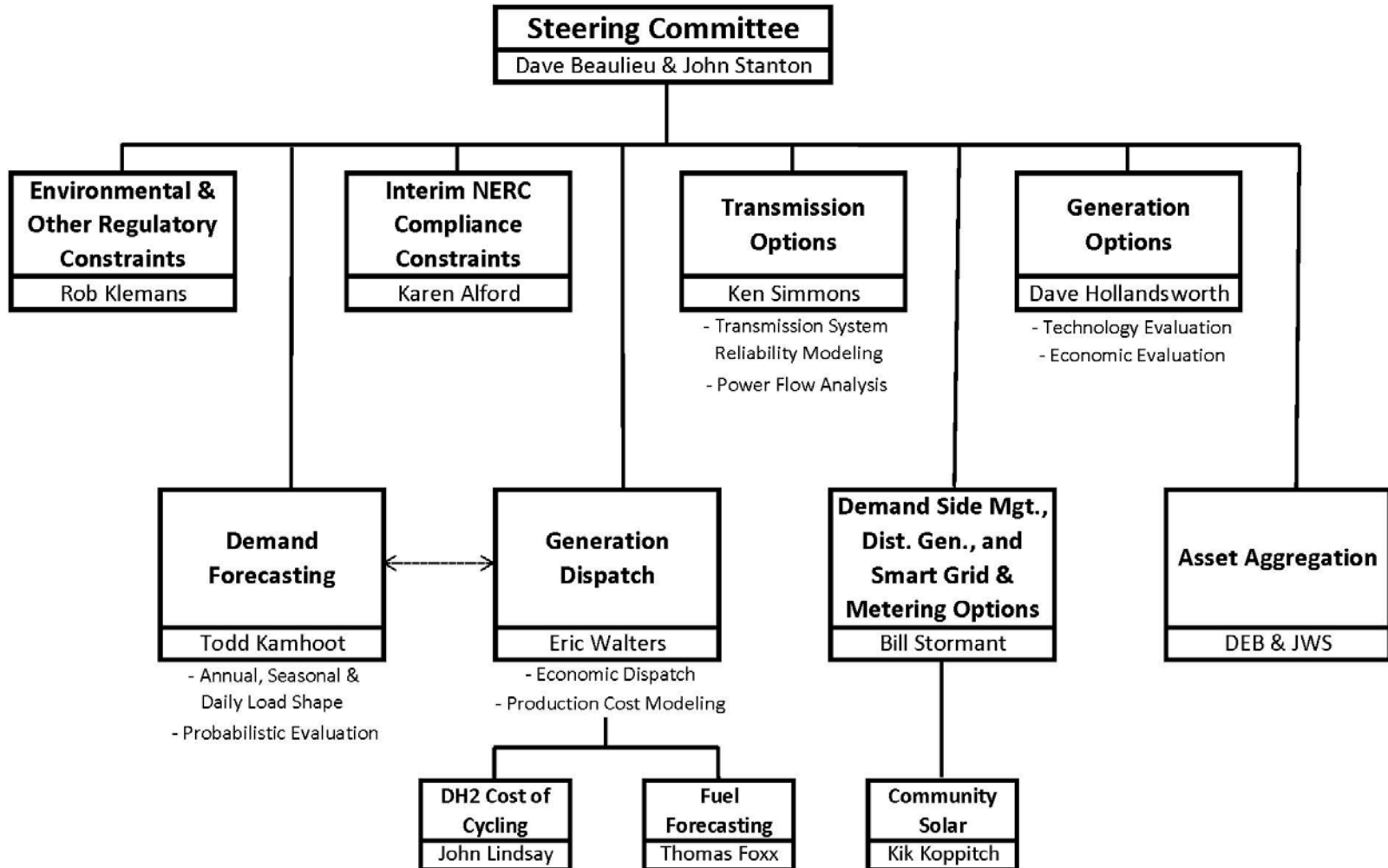
A Plan to best meet GRU's obligation to the reliability of the bulk electric system (BES) of The State of Florida and best serve the needs of GRU's customers.



Power 2020 will Consider:

- Seasonal, daily and hourly customer demand
- Future Regulatory (EPA, NERC) constraints
- GRU generation assets
- The GRU transmission system
- Current purchase power obligations (GREC)
- Current wholesale power & transmission contracts (COA, WP, SECI)
- Future power purchase/sale opportunities
- Distributed energy resources (DER)
- Demand side load management (DSM)
- Asset aggregation

POWER 2020

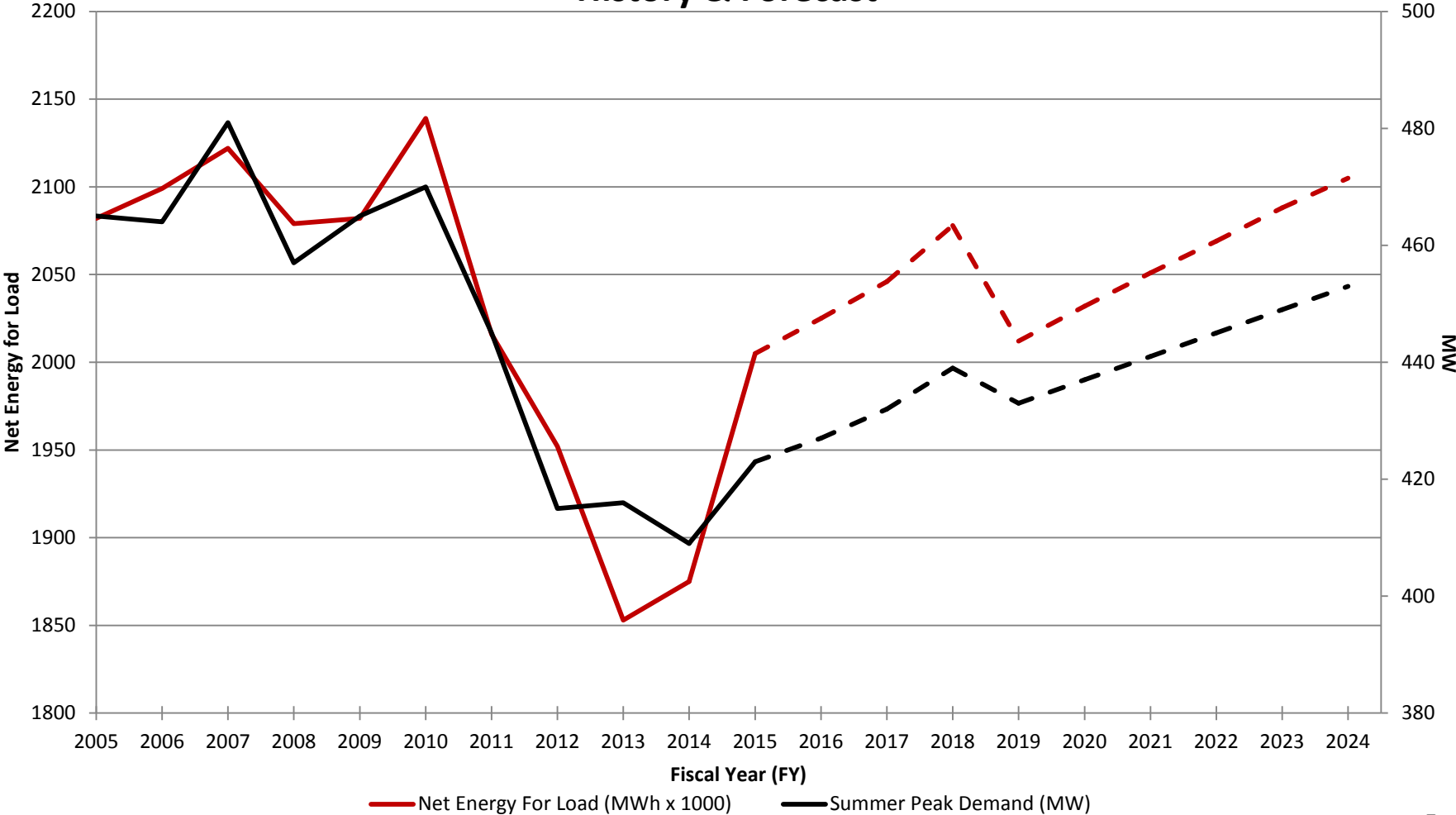


What is significant about 2020?

- Not so far out on the planning horizon that dealing with issues can be delayed
- Far enough out on the planning horizon that there is time for action
- GRU's current coal transportation contract runs out on December 31, 2019 and the "as delivered" cost of coal will increase
- EPA Existing Source Performance Standard (ESPS)/CO₂ Building Blocks #1 & #2 Compliance Year

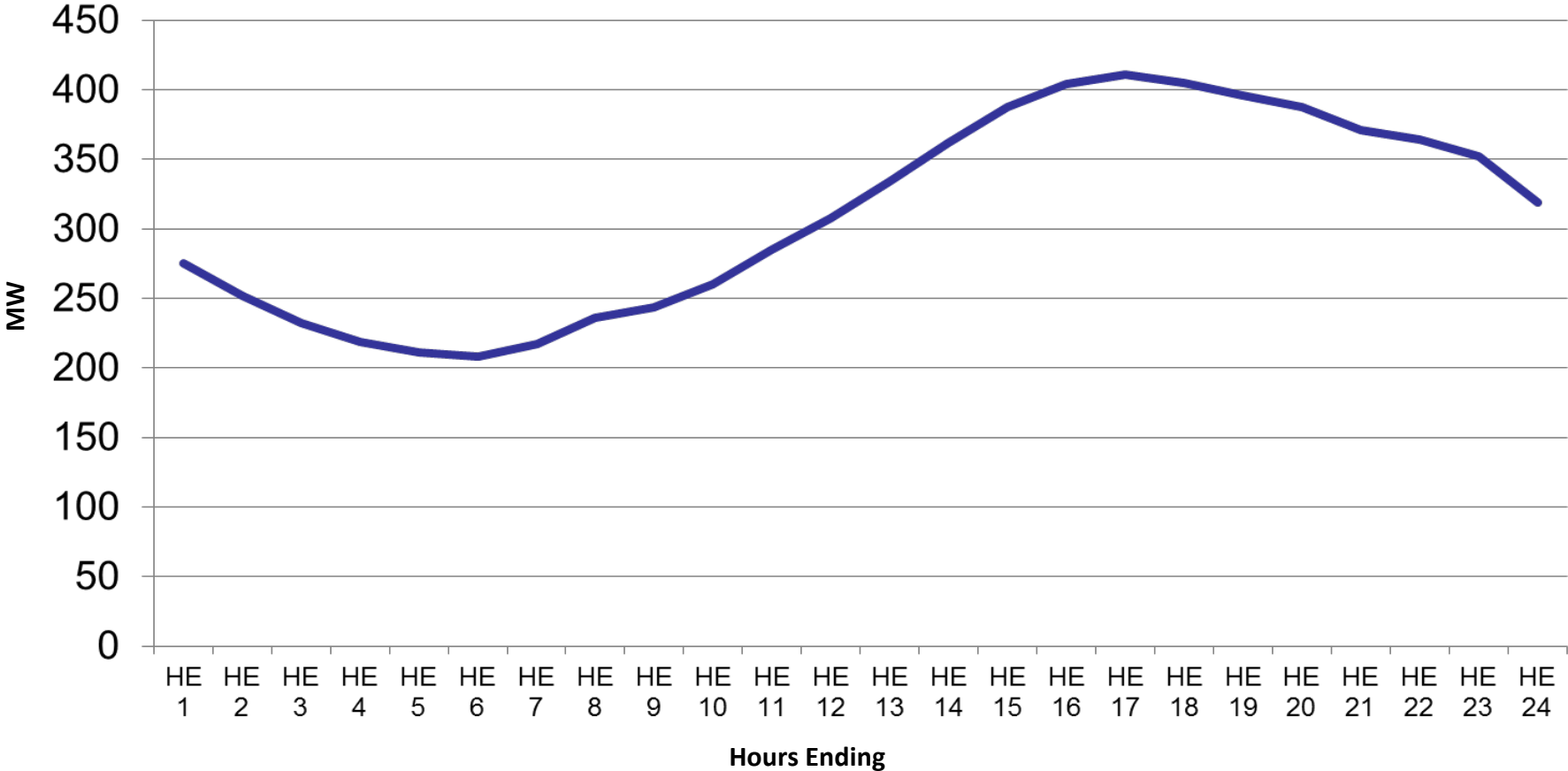
Current & Evolving Situation; Demand Characteristics

GRU Summer Peak Demand and Net Energy for Load History & Forecast

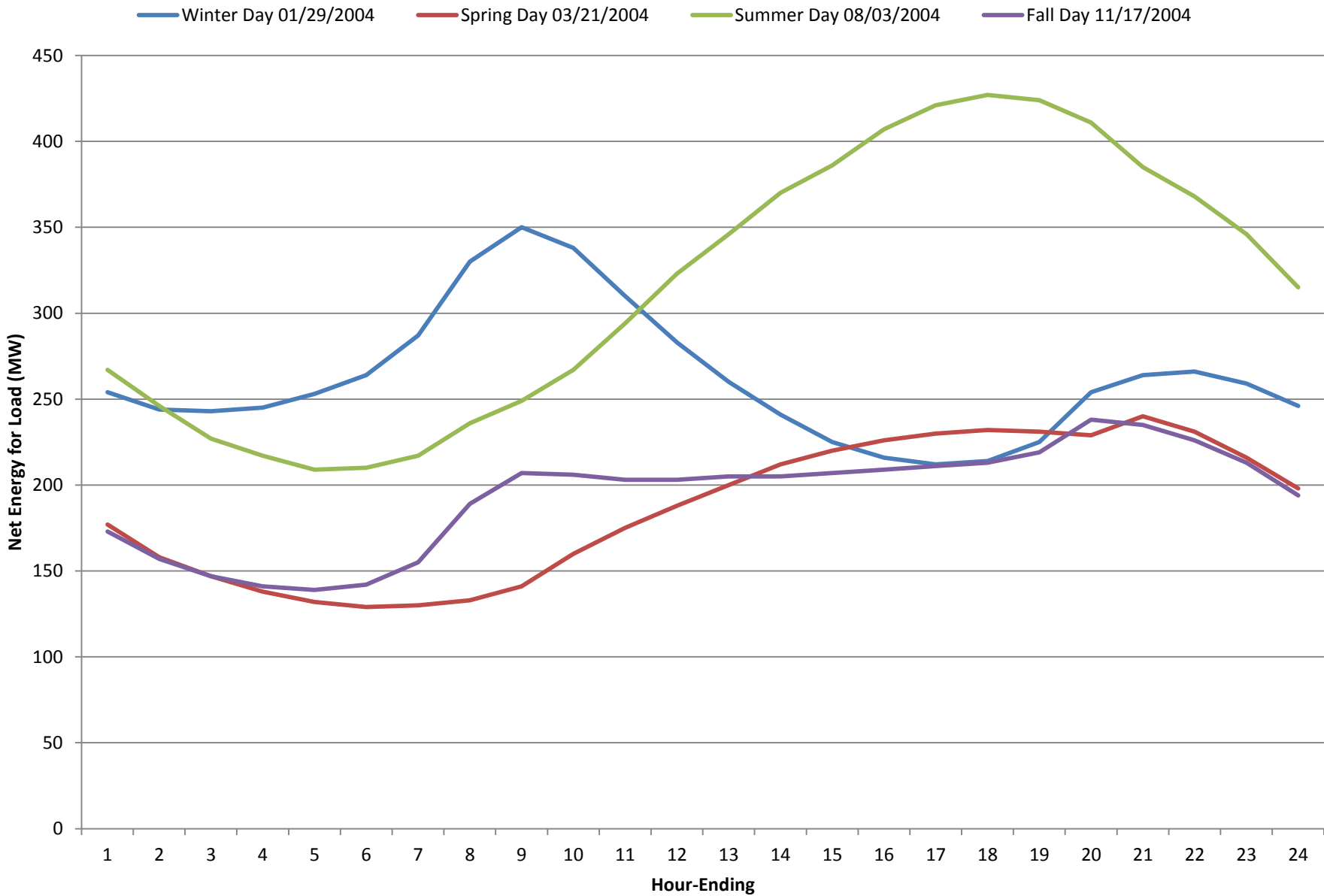


Current & Evolving Situation; Demand Characteristics

**GRU Demand
August 5, 2013**



Seasonal Load Shapes



Current & Evolving Situation; Generation

(in GRU Service Territory; GRU + GREC + DER)

- GRU installed capacity
 - Reserve under different scenarios
- DH 2 required to perform intermediate service
 - Deep load cycling
 - Seasonal cold standby (CSB)
 - Gas -vs- coal price dependent
- EPA ESPS/ CO₂ Emissions from Power Plants
 - Potential Off/On Cycling of DH 2
 - Potential Significant Decrease in DH 2 Capacity Factor

Current & Evolving Situation; Generation

(in GRU Service Territory; GRU + GREC + DER)

- Increasing intermittent distributed generation (solar) that is non-coincident with peak load
- Replacement of DH1 capacity & regulation
 - 50 MW new generation
 - Combustion Turbine (CT)
 - Reciprocating Internal Composition Engine (RICE)
 - Purchase Power

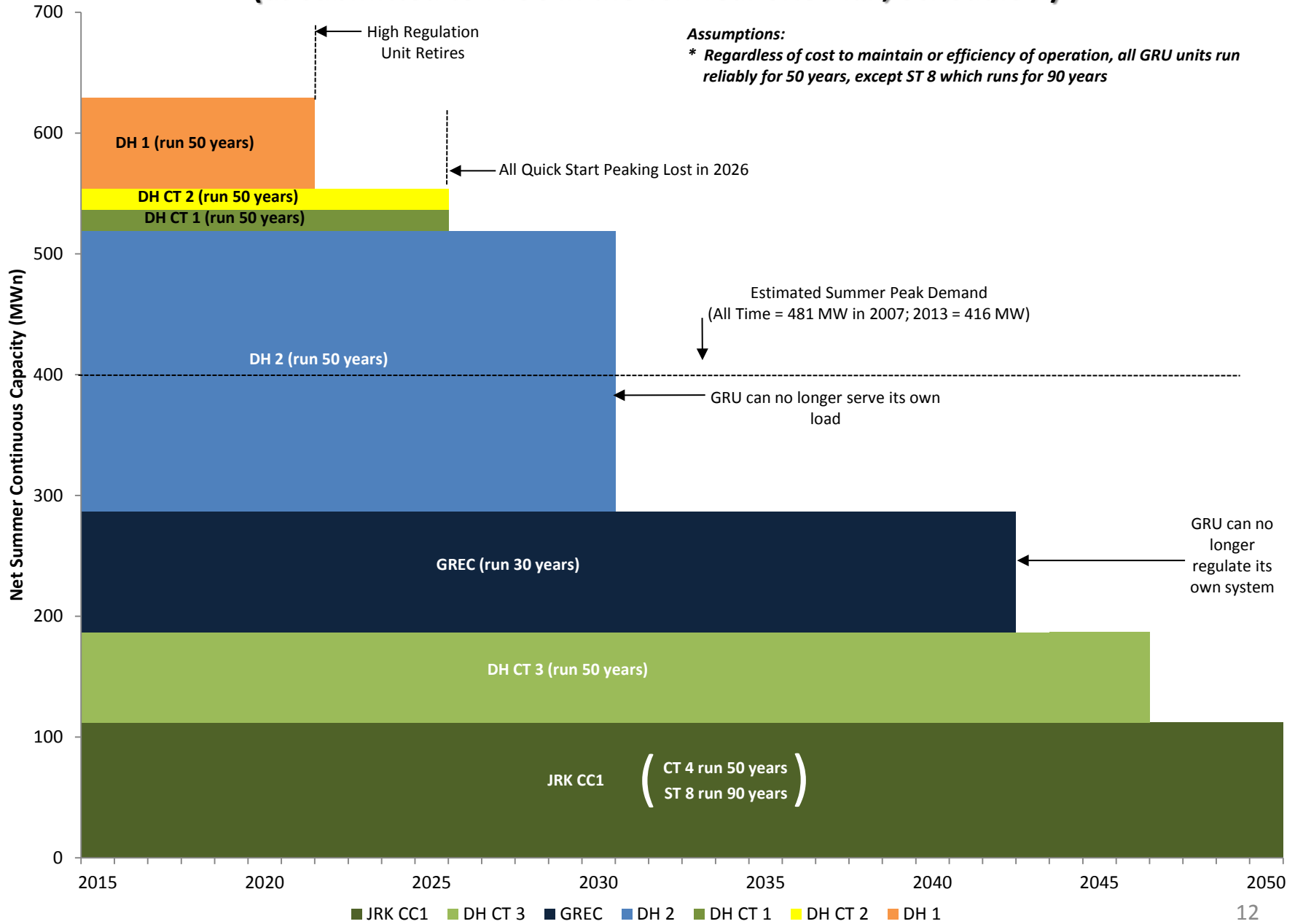
Current & Evolving Situation; Generation

| <u>Plant / Unit</u> | <u>Primary Fuel</u> | <u>Net Summer Capability (MW)</u> |
|--------------------------------------|------------------------------|-----------------------------------|
| GREC | Waste Wood | 102.5 |
| J R Kelly Combine Cycle 1 | Natural Gas | 112.0 |
| Deerhaven Generating Station ST 2 | Coal | <u>232.0</u> |
| Deerhaven Generating Station ST 1 | Natural Gas | 75.0 |
| Deerhaven Generating Station CT 3 | Natural Gas | <u>75.0</u> |
| Deerhaven Generating Station CT 1 | Natural Gas | 17.5 |
| Deerhaven Generating Station CT 2 | Natural Gas | <u>17.5</u> |
| South Energy Center | Natural Gas | <u>4.1</u> |
| | Base Capacity | 446.5 |
| | Intermediate Capacity | 150.0 |
| | Peaking Capacity | 35.0 |
| | Total Capacity | <u>635.6</u> |

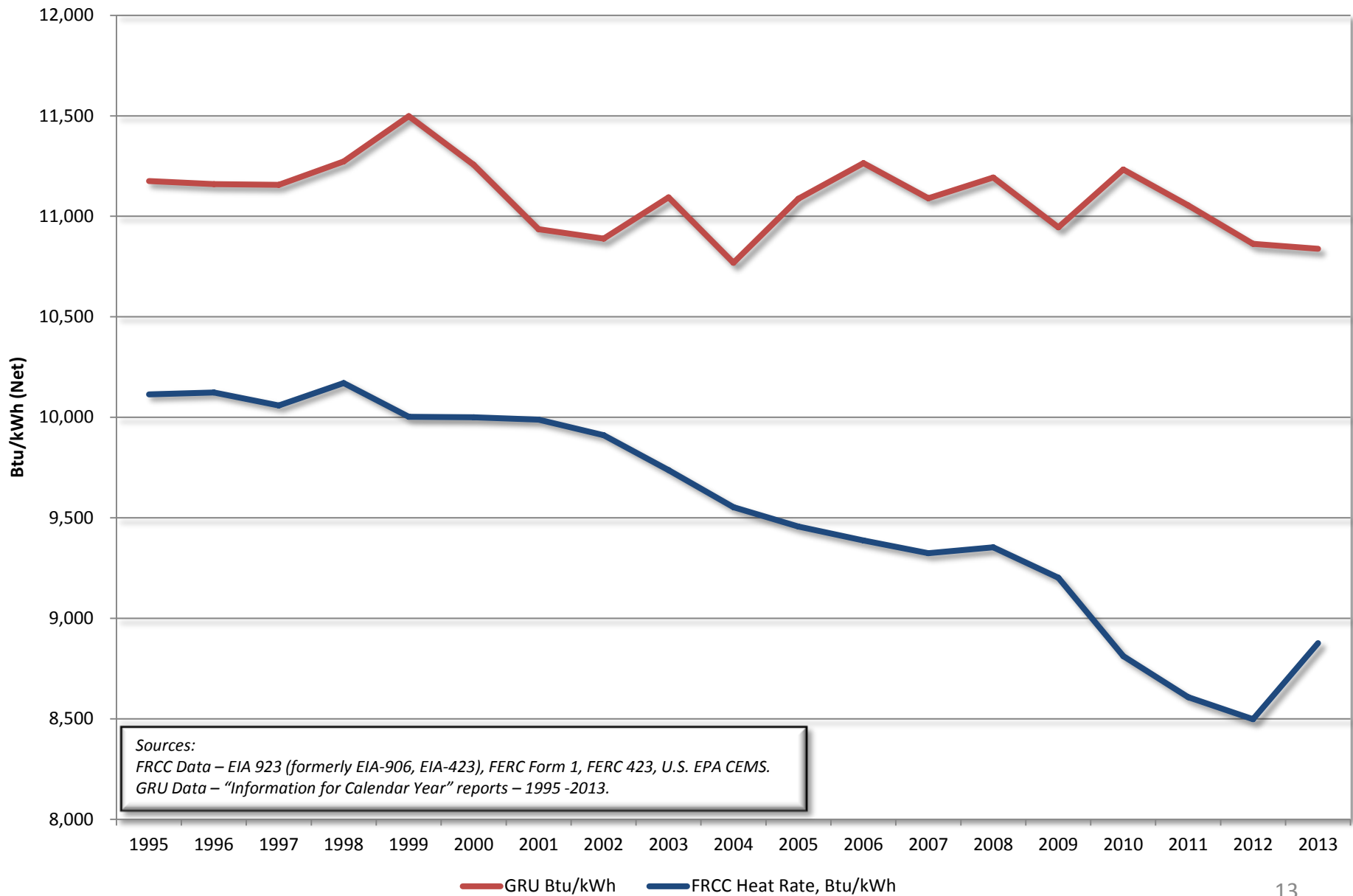
Note: All time Peak Load was 484 mw, served in 2007

GRU's Current Generation Plan

(as submitted to FPSC in the Ten Year Site Plan, Schedule A)

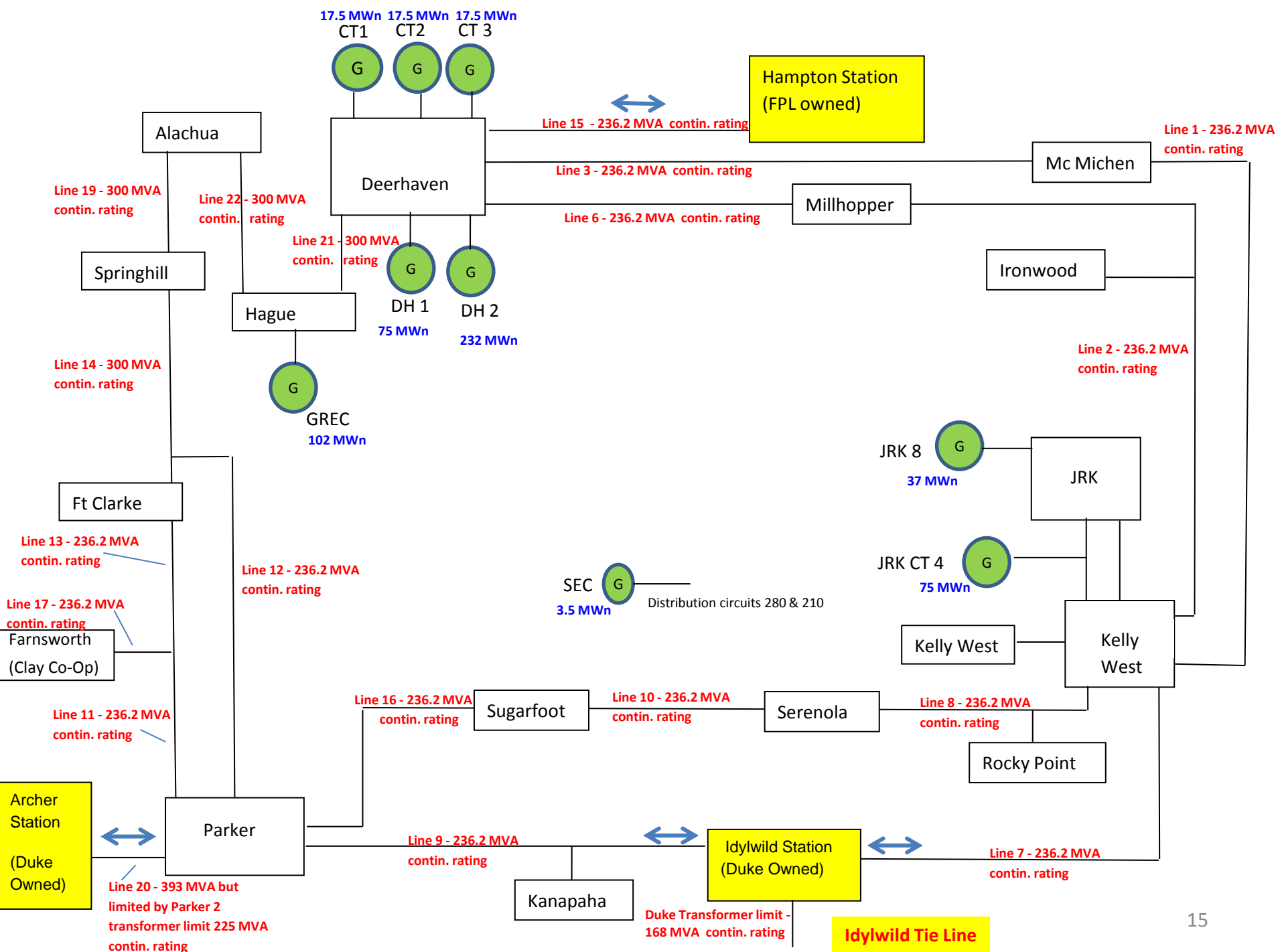


GRU Net Heat Rate vs. FRCC Net Heat Rate 1995-2013



Current & Evolving Situation; Transmission

- Three GRU ties with Duke, one with FPL
- Option to serve load with imported power
 - Existing ties will not reliably support serving load solely by imported power
 - Above 375 MW load, loss of one tie would overload GRU and FPL or Duke
 - Currently must have GRU generation



Current & Evolving Situation; Transmission

- Transmission Upgrade(s) Evaluation
 - Modeled with GREC only
 - Upgrades identified
 - Model with (A) GREC + 35MW & (B) GREC + 85MW
 - Additional upgrades required?
- Determine cost of upgrades
- Determine required upgrades to FPL and/or Duke Systems & cost to GRU

Current & Evolving Situation; Distributed Energy Resources (DER)

- Solar generation in GRU's service territory will continue to increase
 - Intermittency requires quicker system generation response to follow load
- Expectation that other forms of DER will enter the mix
 - Fuel cells? ...Wind?
- Micro Grids
- Potential for mutually beneficial operation of standby generation

Current & Evolving Situation; Demand Side Management (DSM)

- DSM is a net negative air emissions alternative to generation
 - It can be a low cost alternative in meeting reserve calls
 - Requires customer participation
- GRU has no active DSM
 - DSM is a “Building Block” in the ESPS/CO₂
- Smart Grid/Smart Metering

Current & Evolving Situation; Asset Aggregation

- Discussions with two entities about dispatch of combined fleet
 - Preliminary modeling indicates potential cost reduction
 - Transmission issues
 - Stranded asset issues



The Big Questions:

- What will be the size & shape of the demand?
 - High growth of customer base?
 - Low consumption per customer?
 - High addition of solar generation?
 - High addition of other DER?
- How does GRU best meet the size & shape of the demand?
 - Solution (Gen, TX, DSM, etc.) optimization
 - Impact of EPA Regulation