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Southern Alliance for
Clean Energy



Rates vs. Energy Efficiency

**2013 ACEEE National Conference on Energy
Efficiency as a Resource**

**September 2013
John D. Wilson**

About Us

- ***SACE promotes responsible energy choices that create global warming solutions and ensure clean, safe and healthy communities throughout the Southeast.***
- ***SACE has been a leading voice for energy policy to protect the quality of life and treasured places in the Southeast for over 25 years. Founded in 1985, SACE remains the only regional organization primarily focused on developing clean energy solutions throughout the Southeast.***



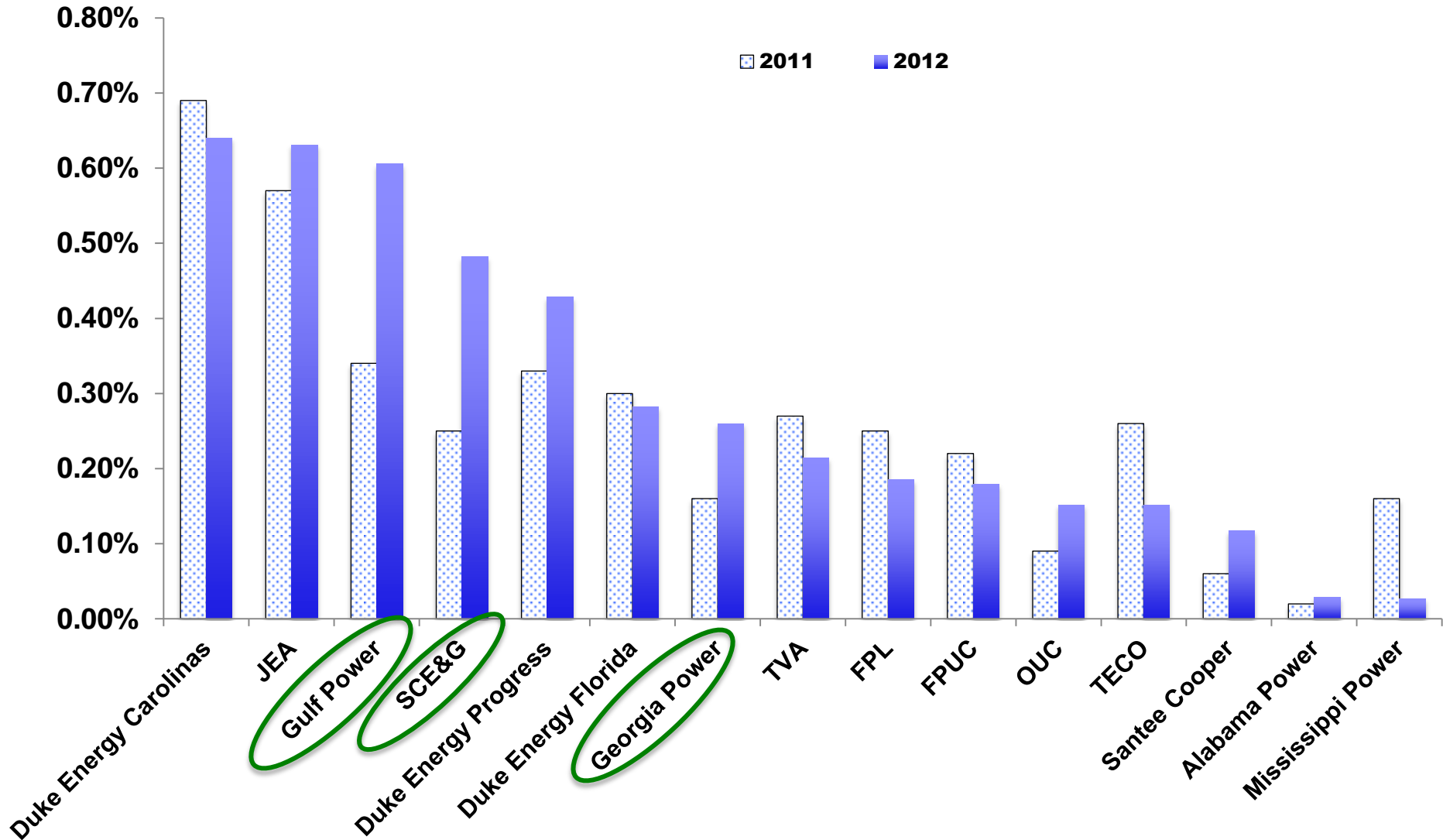
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Southeast Energy Efficiency Program Impacts 2013 vs 2012



An Energy Mystery

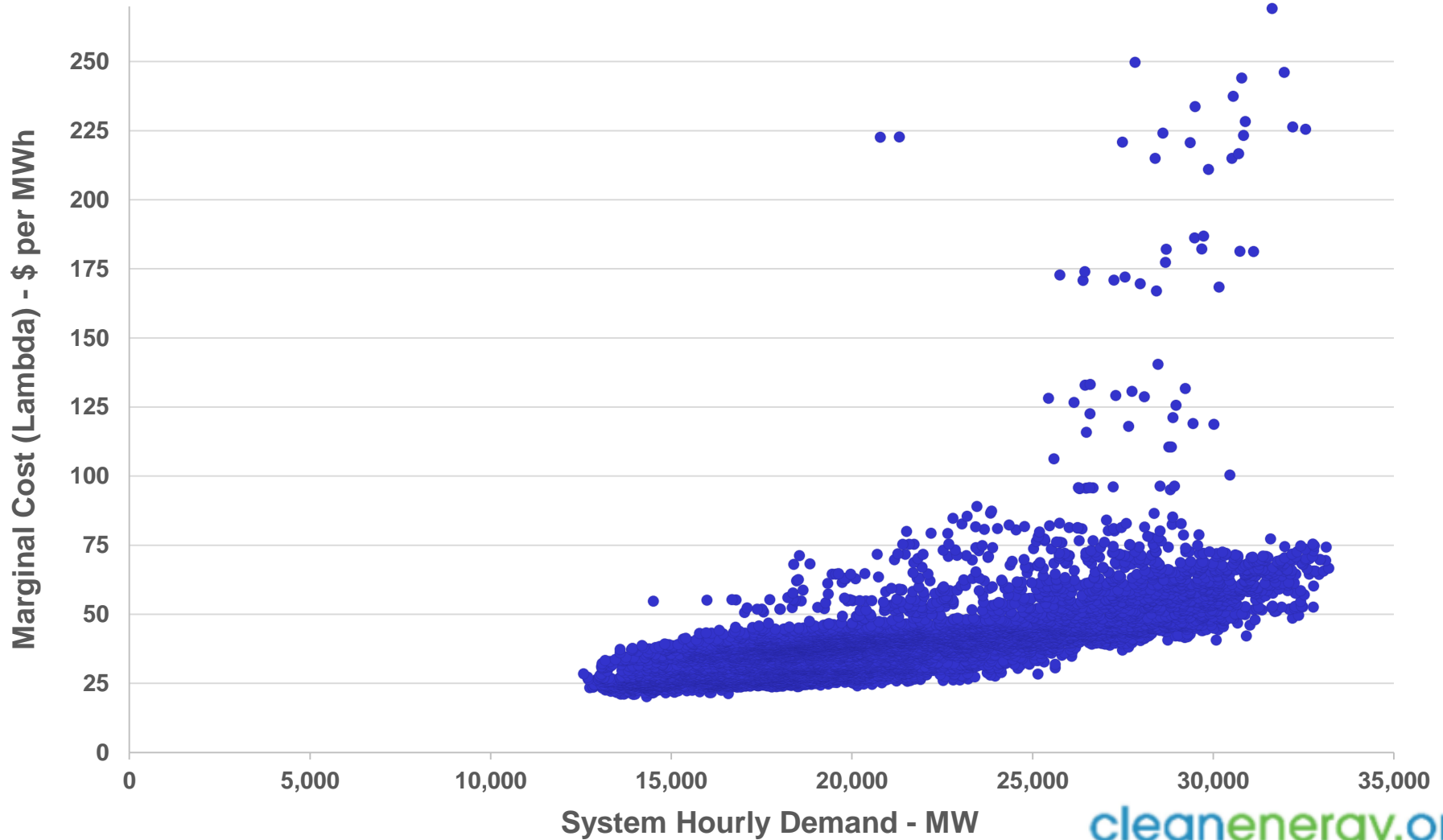
- From 2010 to 2012, Georgia Power's fuel cost rider dropped by 19%:
 - 2010: \$42 / MWh
 - 2012: \$34 / MWh
- Why?



An Energy Mystery

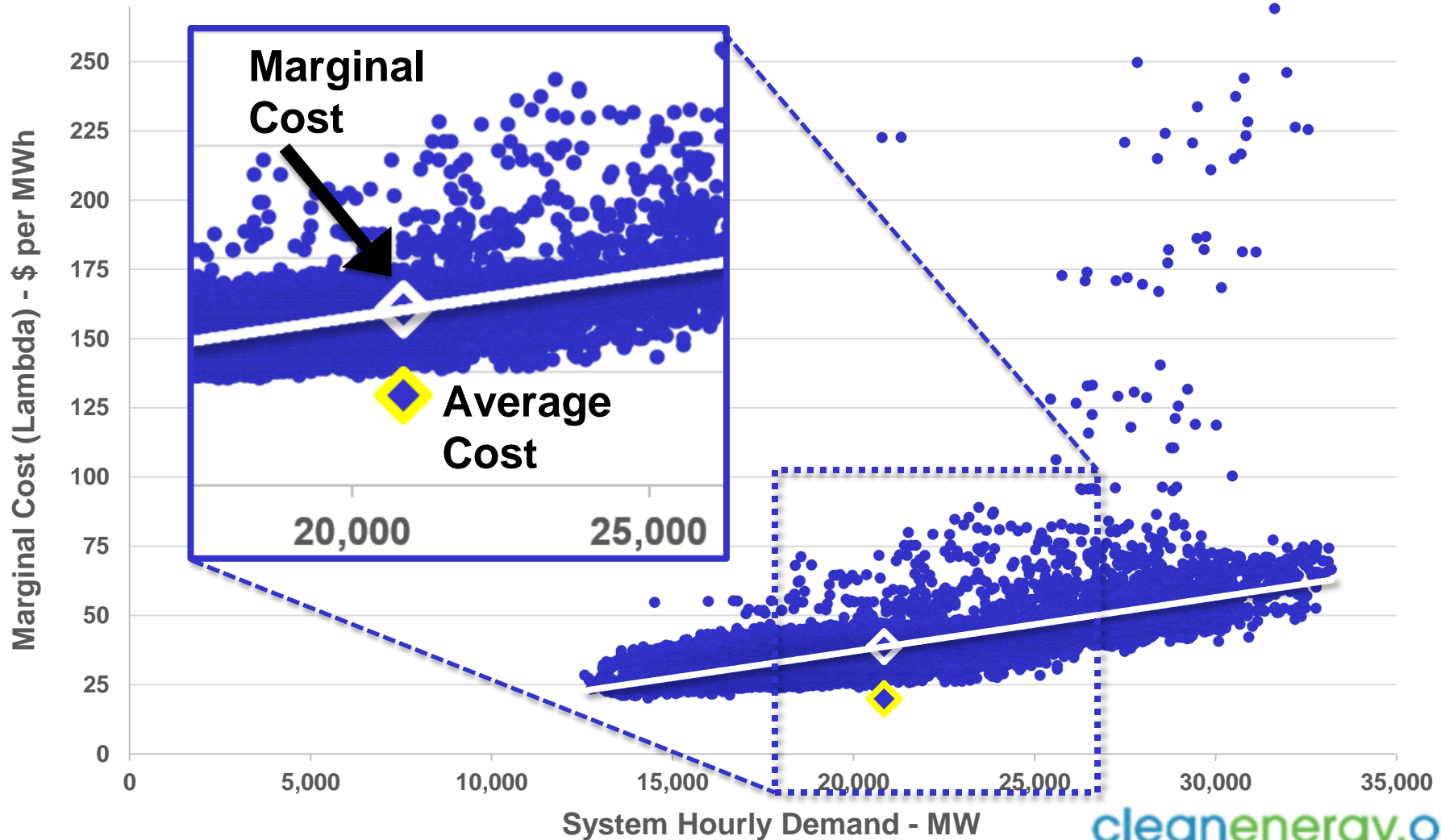
- From 2010 to 2012, Georgia Power's fuel cost rider dropped by 19%:
 - 2010: \$42 / MWh
 - 2012: \$34 / MWh
- Why?
- a) Natural gas fuel prices down 33%:
 - 2010: \$5.27 / MCf
 - 2012: \$3.52 / MCf
- b) Recession drove demand down 7%:
 - 2010: 96 TWh
 - 2012: 89 TWh
 - GPC 2011 efficiency: 130 GWh (0.2%)

Southern Company: 2010 Dispatch Costs



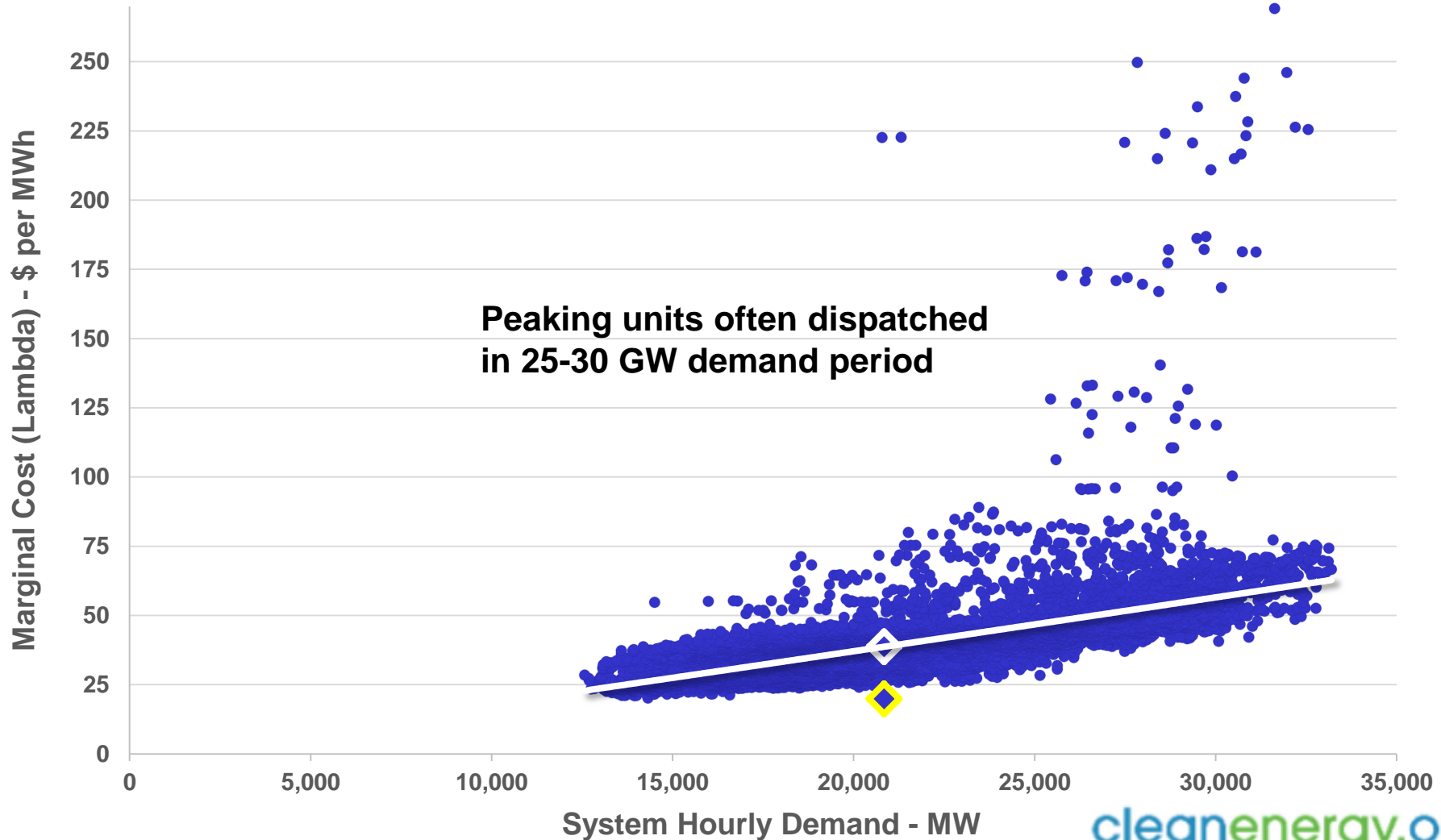
Sources: FERC Form 714

Southern Company: 2010 Dispatch Curve

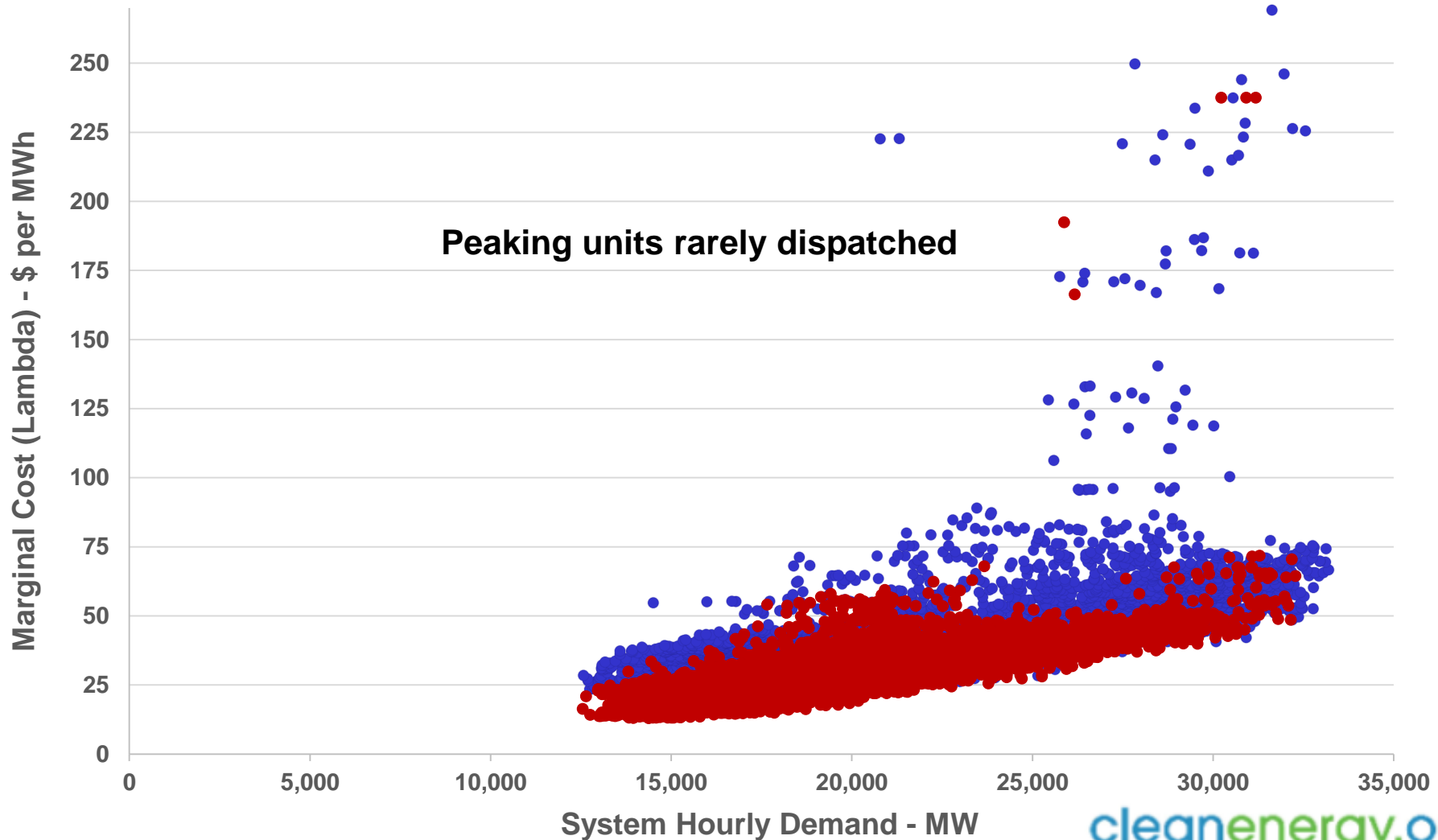


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Southern Company: 2010 Dispatch Curve

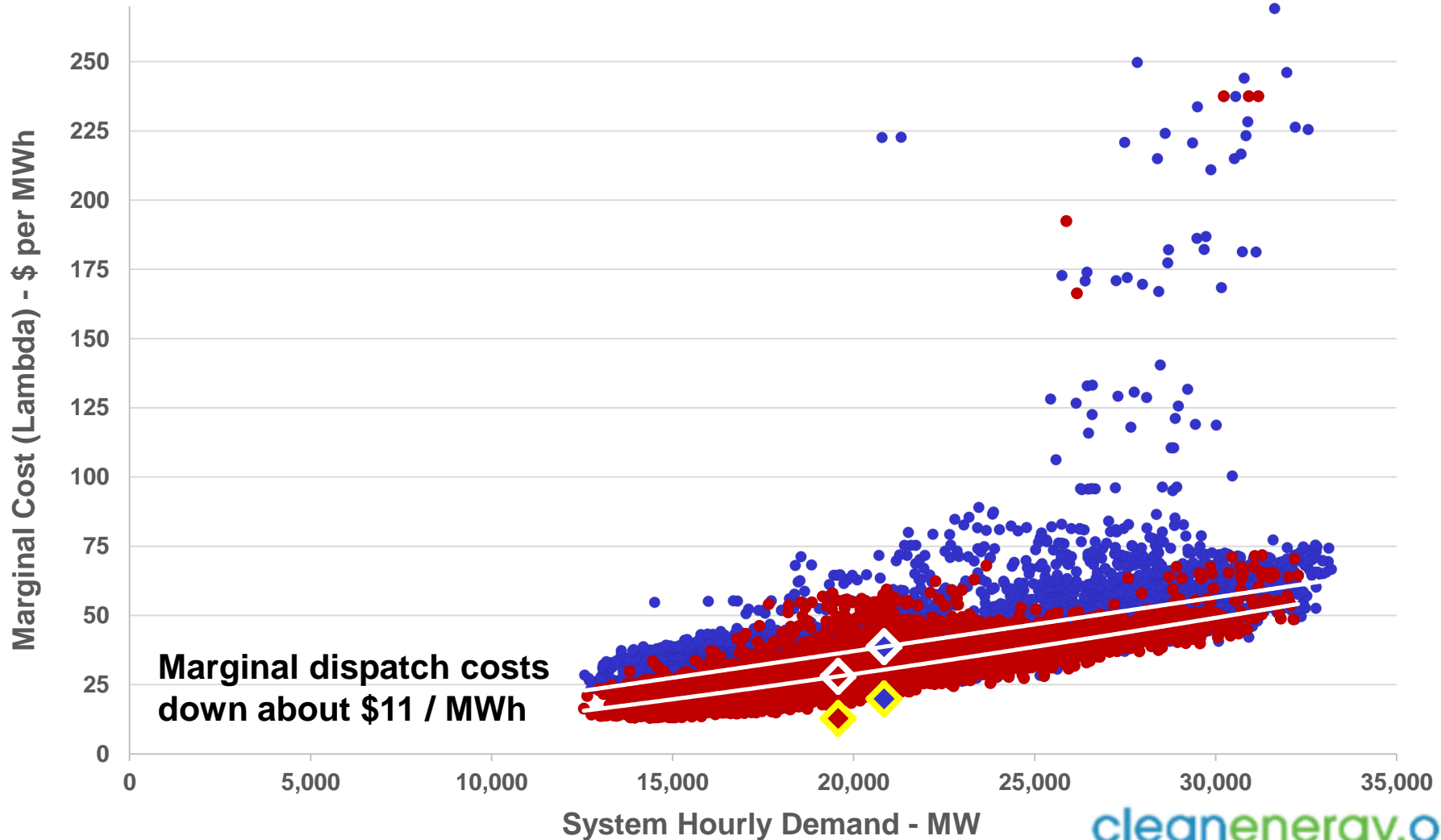


Southern Company: 2010 vs 2012 Dispatch Costs



Sources: FERC Form 714

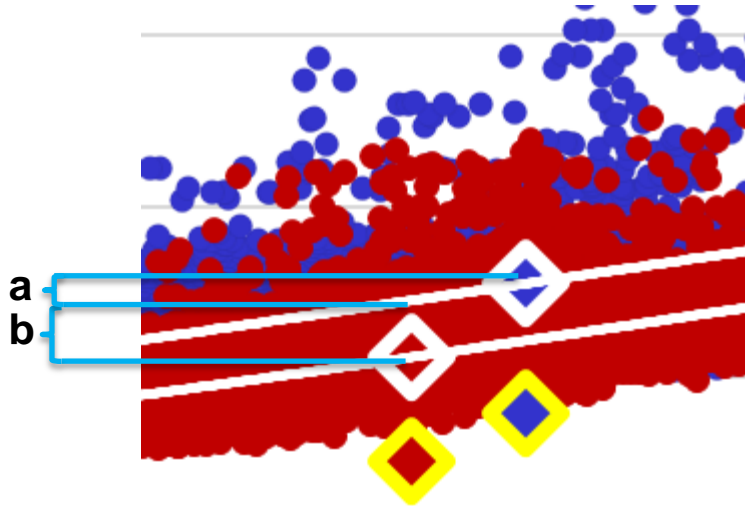
Southern Company: 2010 vs 2012 Dispatch Costs



Mystery Solved: It's Both!

✓ Georgia Power's \$12 fuel cost rider drop driven by:

- a) ~ 25% demand reduction
- b) ~ 75% fuel cost reduction



a) Recession drove demand down 7%:

- 2010: 96 TWh
- 2012: 89 TWh
- GPC 2011 efficiency: 130 GWh (0.2%)

b) Natural gas fuel prices down 33%:

- 2010: \$5.27 / MCf
- 2012: \$3.52 / MCf

What does this have to do with energy efficiency?

- **Demand reduction results in universal benefit: lower system costs for ALL customers.**
 - Of course, fewer power plants needed: long term downward pressure on rates.
 - But also, demand reduction immediately drives down average fuel costs - DRIPE in power markets.
- **Energy efficiency causes demand reduction.**
- **This demand reduction induced cost effect demonstrates how energy efficiency results in an IMMEDIATE downward pressure on rates.**

That was just my preface!

- **Benefits of energy efficiency in Southeastern utility systems.**
- **Bill (and rate) impacts of energy efficiency in Southeastern utility systems.**
- **Implications for policy (and advocacy).**

Benefits of Energy Efficiency

| 2012 IRP | Base Efficiency Plan | High Efficiency Plan | Total Savings |
|----------------|----------------------|----------------------|---------------|
| Duke Carolinas | \$117 billion | \$113 billion | \$5 billion |
| Duke Progress | \$87 billion | \$83 billion | \$4 billion |
| SCE&G | (not disclosed) | (not disclosed) | \$0.3 billion |
| Georgia Power | (trade secret) | (trade secret) | \$2 billion |
| TVA (2010) | \$128 billion | \$127 billion | \$1 billion |

- First-ever studies of high efficiency plans in SE utility resource plans
- “High Efficiency” plans vary in scale, timing of efficiency studied
- Carolinas data disclosed in data requests
- Georgia Power analysis conducted by SACE’s expert witness
- TVA analysis from a post-IRP study

Value of Energy Efficiency

| Efficiency Benefit ¢ per kWh | PURPA Avoided Cost | IRP Model System Benefit | System Benefit Beyond PURPA |
|---------------------------------|-----------------------|-----------------------------|--------------------------------|
| Duke Carolinas | 5.5 ¢ | 9.7 ¢ | 4.2 ¢ |
| Duke Progress | 5.4 ¢ | 11.3 ¢ | 5.9 ¢ |
| SCE&G | 5.2 ¢ | 9.2 ¢ | 4.0 ¢ |
| Georgia Power | | (trade secret) | |
| TVA (2010) | 3.5 ¢ | 9.1 ¢ | 5.6 ¢ |
| Pacificorp (Utah) | 6.4 ¢ | 8.7 ¢ | 2.3 ¢ |
| Avista (Washington) | 5.0 ¢ | 8.8 ¢ | 3.8 ¢ |
| Average | 5.2 ¢ | 9.5 ¢ | 4.3 ¢ |

Sources: SACE analysis of PURPA rates filed by utilities, generally for 2012; SACE analysis of Duke Carolinas (2012) and Duke Progress (2012) IRPs; SC&G IRP (2012); Pacificorp IRP (2011); and Avista IRP (2011). Average excludes Georgia Power.

Universal Benefit of Energy Efficiency

| Benefit & Adjustment | Notes | Example (NPV) |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Total System Benefits (Avoided Cost) | Avoided cost * kWh saved The system benefit should be derived from a resource planning model and not PURPA. | \$10 billion |
| Lost Revenues, fuel only | Fuel cost rate * kWh saved Fuel cost savings by participants are not shared with non-participants. | - \$2 billion |
| <i>Gross Universal Benefit</i> | | <i>\$8 billion</i> |
| Lost Revenue Recovery | LRAM, decoupling, or frequent rate cases If the regulator provides for the utility to be “made whole,” then those revenues are collected from customers and hence reduce the benefit to non-participants. These revenues mitigate the fixed cost portion of bill savings (along with the fuel cost savings) that benefits participants. | - \$4 billion |
| <i>Net Universal Benefit</i> | The net benefit includes avoided power plant (capacity) costs and a lower average cost of fuel. | <i>\$4 billion</i> |

Source: Testimony of Natalie Mims on behalf of Southern Alliance for Clean Energy, South Carolina Coastal Conservation League, Natural Resources Defense Council and Sierra Club, Application of Duke Energy Carolinas, LLC for Approval of New Cost Recovery Mechanism and Portfolio of Demand-Side Management and Energy Efficiency Programs, North Carolina Utilities Commission Docket No. E-7, Sub 1032 (August 5, 2013).

Bill Impacts of Energy Efficiency

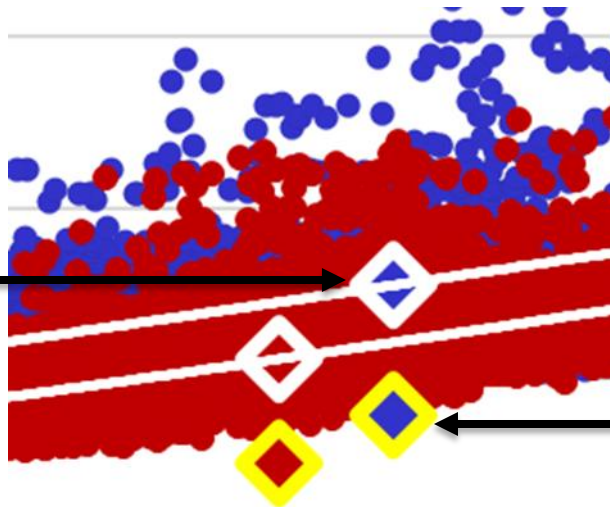
- **Value of energy efficiency is 9 - 11¢ / kWh**
- **How does increased investment in energy efficiency affect customer bills?**
- **It depends on who the customer is!**

Rate Impact Measure (RIM) Test

- **RIM test does not distinguish among customers**
 - Sometimes called “non-participant” test, ignores quantity of and effects on participants
 - Paying for lost revenues vs opt-out
- **RIM test relies on forecasts**
- **Mistakes in forecasting can result in excessive RIM test results**

RIM Formula

Because Georgia Power uses its “base case” forecast for costs and rates



The lost revenue calculation relies on an inflated fuel cost rate

If Georgia Power set rates as it forecasts lost revenues, it would overcollect fuel costs from its customers

RIM Test Solutions

- **How to correct for overestimating lost revenues for fuel costs?**
 - For 2013, SACE calculated a fuel cost forecast using IRP data and adjusted the lost revenues accordingly
 - Other utilities, such as Duke Energy, exclude FCR and other pass-through costs from lost revenues
- **Better: Bill impact model, accounting properly for the universal benefit**

Bill Impact Model: Benefits and Costs

- **Benefit: Full avoided costs**
 - Measured by a system dispatch model
- **Rate forecast for fixed cost recovery recognizing fewer power plants**
 - Including lost revenue recovery
- **Rate forecast for fuel cost effects recognizing lower average fuel cost**
- **Program costs (program administrator)**
 - Including financial incentives

Bill Impact Model: Perspectives Considered

- **Included customer classes**
 - Georgia – industrial class is excluded
 - Carolinas – opt-out customers are excluded
- **For included customer classes**
 - Participants
 - Repeat participants
 - Non-participants
- **Excluded customer classes**
 - System customers
 - Customers of jointly dispatched utilities

Bill Impact Model: Results

| Georgia Power Enhanced Portfolio | Participation Rate through 2023 | Participant Bill Impact 2014-23 | Non-Participant Bill Impact 2023 |
|----------------------------------|---------------------------------|---------------------------------|----------------------------------|
| Residential | 56 % | 5 % savings | 3% rate impact |
| Commercial | 52 % | 18 % savings | 2% rate impact |
| Industrial | 62 % | 12 % savings | 2% rate impact |

- **Most of our model results are classified as trade secret by Georgia Power**
 - Participant impact is an average benefit, and includes the years before the participant participated (lower savings)
 - Non-participant rate impact is the peak impact, and does not reflect lower rate impacts in early years
- **SACE proposed Enhanced Portfolio with roughly triple the approved portfolio overall and including an industrial program**
 - 11 TWh and 2.2 GW savings through 2023

Implications for Participants

- **Energy efficiency programs:**
 - Reduce bills for the majority ...
 - IF they are scaled to national leadership levels (e.g. 1% savings per year)
- **Example:**

1% annual = 10% participation x 10% avg savings

 - Over 10 years
 - Cumulative participation → 60%
 - Cumulative avg savings → 17% (includes repeats)

Implications for Non-Participants

- **Non-participants who pay the rider:**
 - **May have SLIGHTLY higher rates over time ...**
 - **GPC: 75% of program costs offset by capital cost savings**
 - **GPC: Lower fuel costs don't quite offset lost revenues**
 - **Their rates may be less volatile**
- **Non-participants who DON'T pay the rider:**
 - **Windfall from lower average fuel costs**
 - **Rate cases or system-wide lost revenue mechanism may reduce the windfall**
 - **Jointly dispatched utilities may also benefit**
 - **Alabama Power, for instance!**

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