ARE “WE” ASKING TOO MUCH OF ELECTRICITY MARKETS?

CEE 4th Mid-Year Meeting, June 28, 2016
Musings on why retail electricity prices diverge from wholesale prices

Tsai
Declining wholesale energy prices & falling electricity sales

**Wholesale power prices decrease across the country in 2015**

Monthly average on-peak electricity prices at key trading hubs (2014-15) (dollars per megawatt hour)

<table>
<thead>
<tr>
<th>JANUARY 11, 2015</th>
</tr>
</thead>
</table>

**MARCH 14, 2016**

Total electricity sales fell in 2015 for 5th time in past 8 years

Annual changes in total electricity retail sales (2002-15) (percent change)

<table>
<thead>
<tr>
<th>MARCH 14, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total electricity sales fell in 2015 for 5th time in past 8 years. Annual changes in total electricity retail sales (2002-15) (percent change).</td>
</tr>
</tbody>
</table>

©BEG/CEE, Mid-year Meeting, June 2016
Increasing average residential retail “prices” nation wide

Average retail electricity price is calculated as total bill divided by total consumption, including energy costs plus T&D charges.

Data Source: US EIA Electric Power Annual
Possible reasons

• Lower load, same infrastructure ➔ higher fixed charges
  • DER (e.g., rooftop solar) plays a role
    • Nevada PUC decision to increase fixed charges
    • Arizona PUC to eliminate net metering (considerations in other states vs Brookings survey)

• Investment in T&D
  • To accommodate distant renewables (e.g., CREZ lines in ERCOT)
  • Smart meters (partially DOE-funded)

• Utility investment in renewables
  • The new gold-plating?

CEE submitted a grant application to DOE NETL to study uncertainty and risks associated with adopting DERs (in collaboration with Prof. Surya Santoso, UT Austin Dept. of Electrical and Computer Engineering).
A Closer Look at ERCOT’s Retail Market

Arguably the most successful electricity market with competition at both wholesale and retail levels
When Gov. George Bush signed Senate Bill 7 into law in 1999, he said “competition in the electric industry will benefit Texans by reducing monthly rates.”

However after 15+ years...
While wholesale electricity price follows natural gas price

ERCOT Wholesale Electricity Price vs Natural Gas Price

Data Source:
ERCOT hub average wholesale price: from SNL
Natural gas price for power generation: from US EIA

©BEG/CEE, Mid-year Meeting, June 2016
Average retail residential “price” appears disconnected from wholesale price
Average retail residential prices by REPs vs Regulated Utilities

Average Residential Total Price - REPs vs Regulated

Data Source: US EIA Form 826 “Monthly Electric Utility Sales and Revenue Report with State Distributions”; 2015 data is preliminary
Can we conclude that the competitive electricity market has been effective or not in lowering consumer bills?
Let’s take another closer look at 2014-2015, when natural gas price dropped to $2/Mcf and wholesale electricity price also dropped 50%.

We subtracted T&D charges from average REPs total retail price to get average REP energy cost.
Energy component in REPs’ average retail residential prices have declined, but...

T&D Charge data from PUC of Texas at http://www.puc.texas.gov/industry/electric/rates/tdr.aspx

©BEG/CEE, Mid-year Meeting, June 2016
Numerous cheap deals are out there, but...
Where are we now and where are we going

• PUCT seeks to reform Power to Choose website
  • Will/can all consumer complaints be addressed?
  • Should we abandon the Power to Choose website and let private companies compete to create the best electricity shopping portal?
• Or if it’s so hard to change residential consumers’ behavior, should we limit retail choice to only commercial and industrial customers?