



PJM Presentation: IPPSA Meeting

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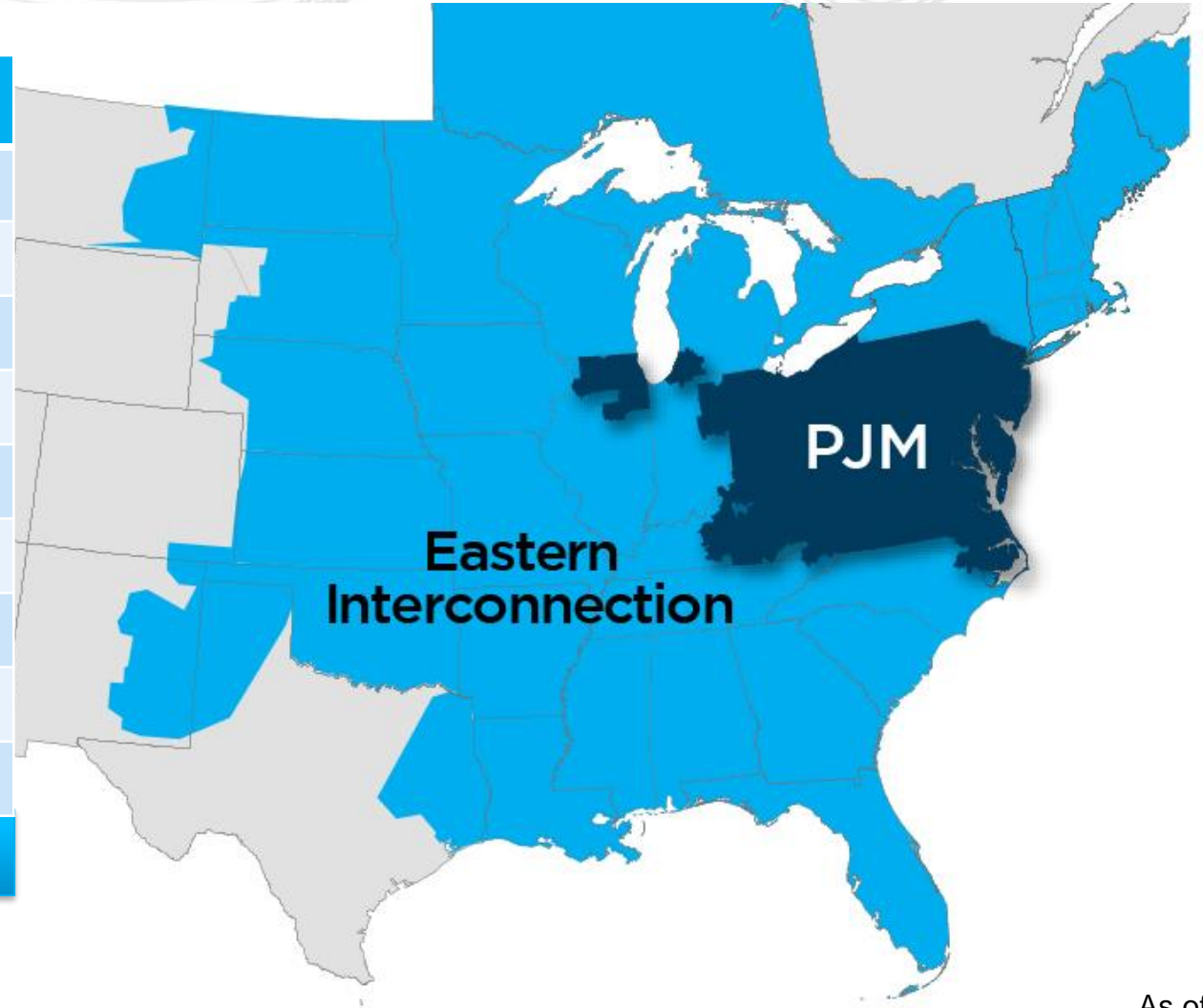


PJM as Part of the Eastern Interconnection

Key Statistics

Member companies	1,000+
Millions of people served	65
Peak load in megawatts	165,492
MW of generating capacity	178,563
Miles of transmission lines	84,042
2017 GWh of annual energy	773,522
Generation sources	1,379
Square miles of territory	243,417
States served	13 + DC

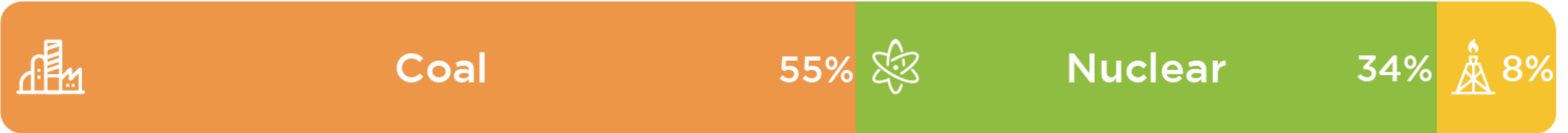
21% of U.S. GDP produced in PJM



As of 2/2018

Fuel Mix

2006

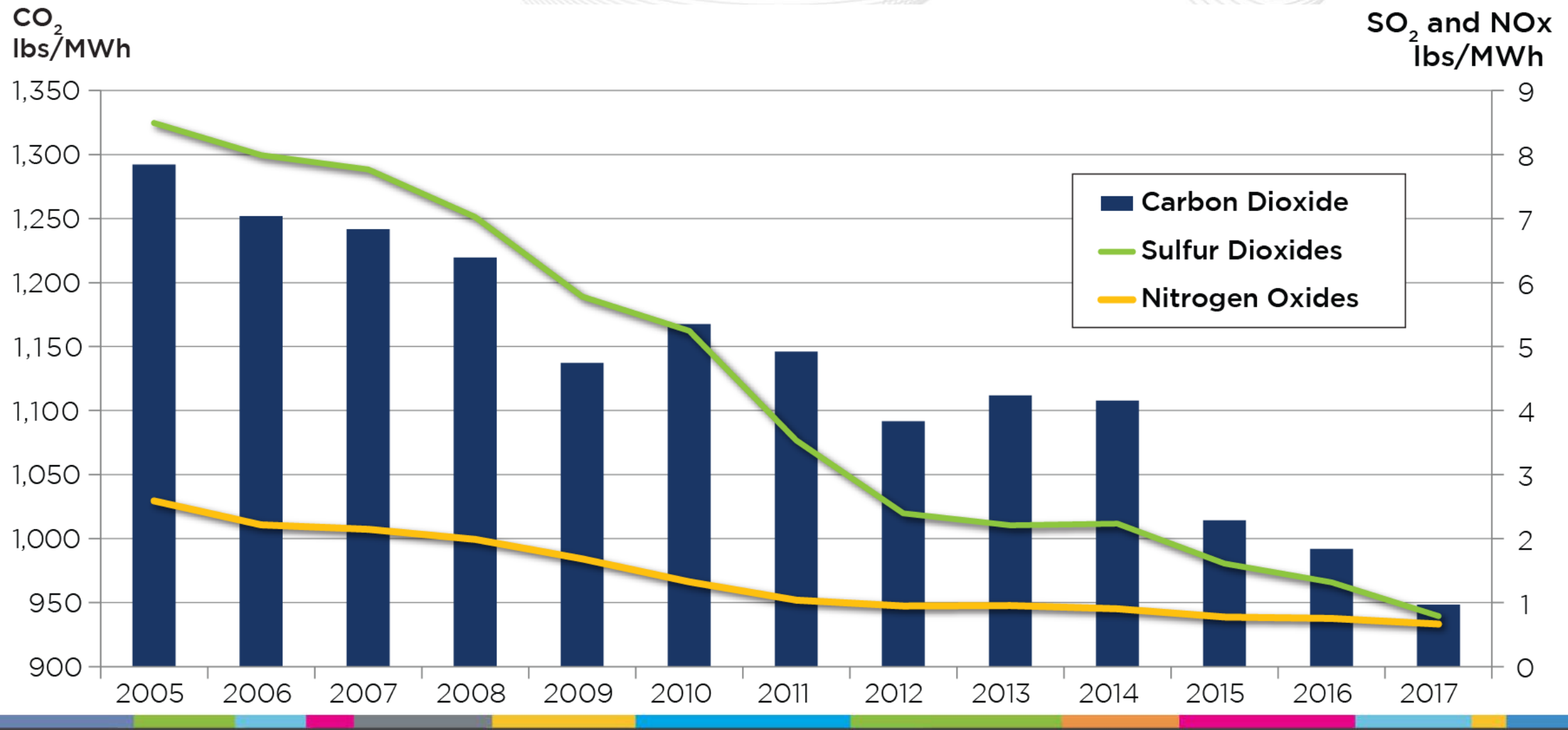


2016

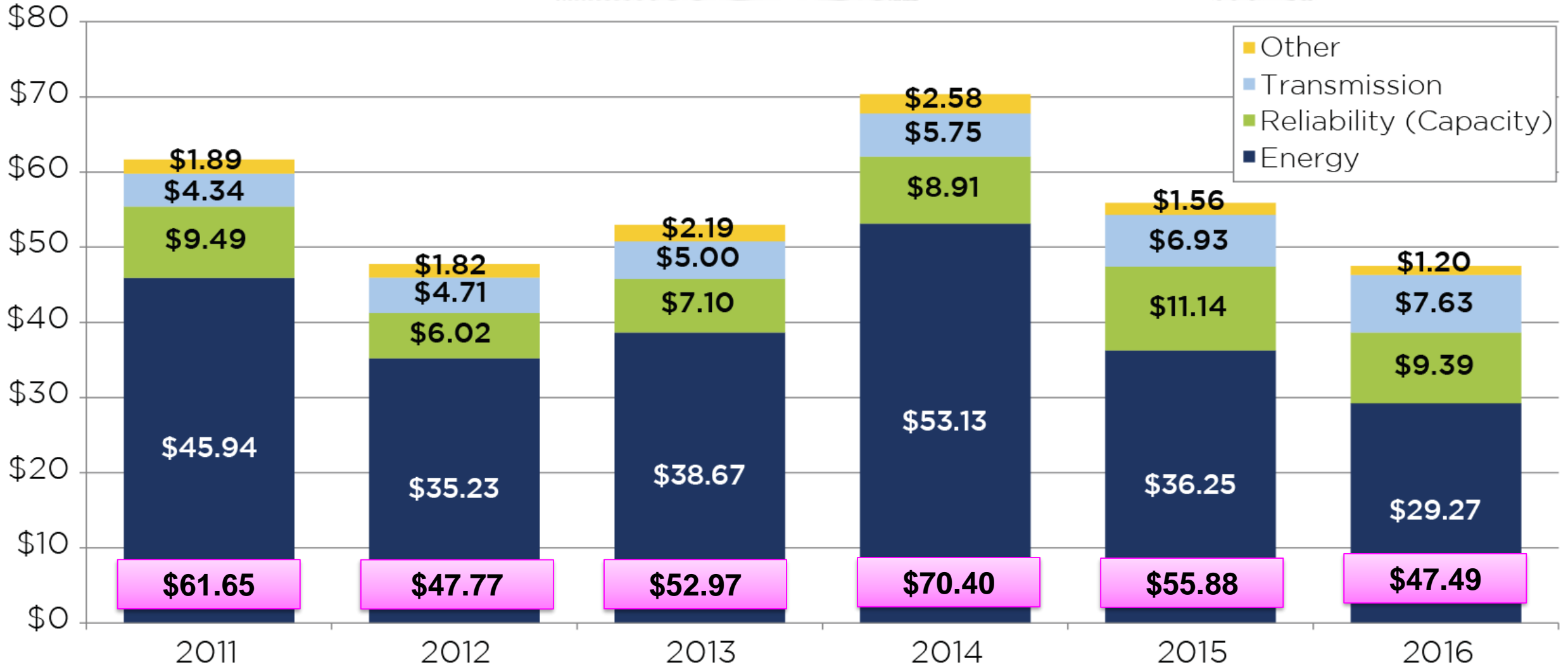




2005-2017 PJM Average Emissions



PJM Wholesale Cost- 6 Years

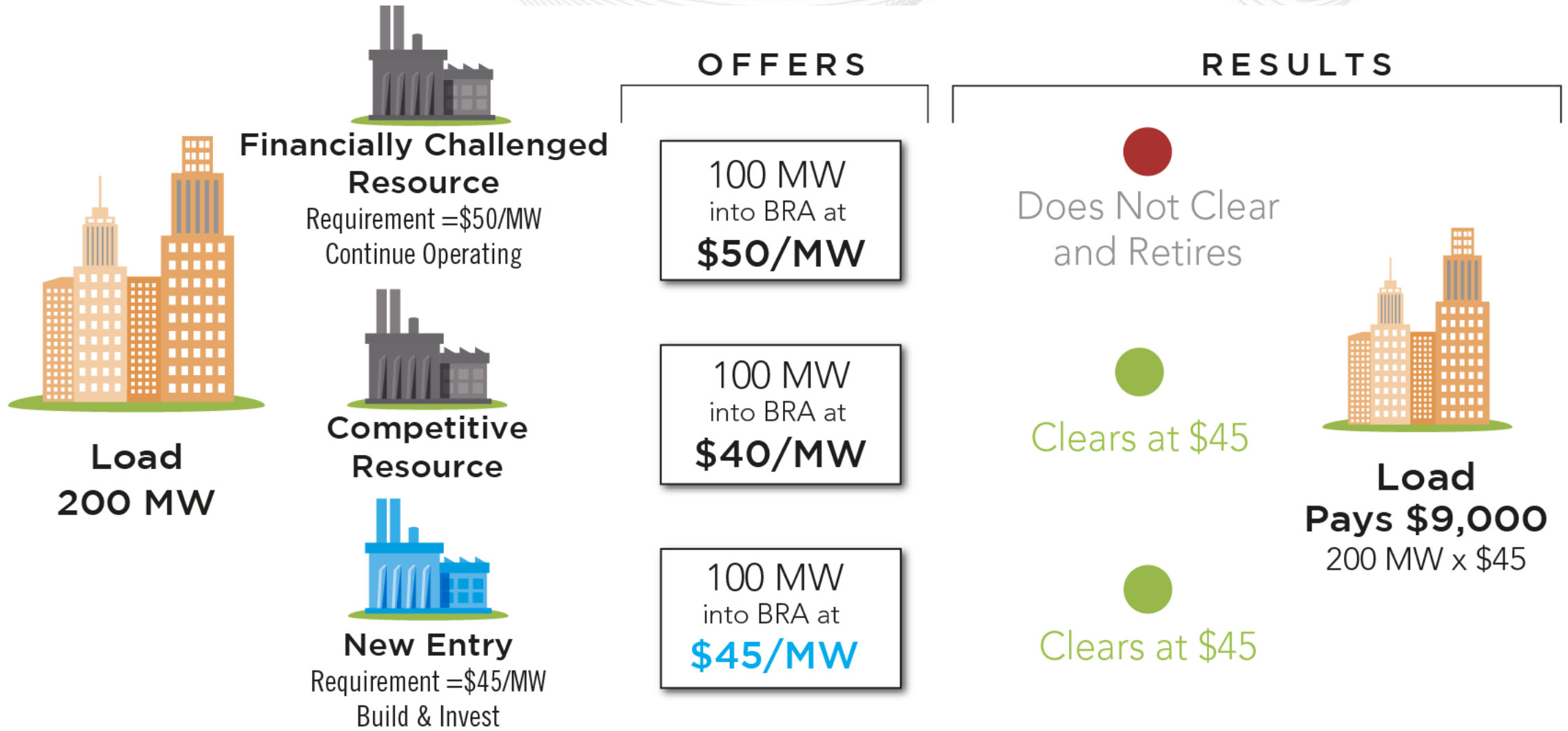


2007

- *Generation Developer* = Publicly Traded (i) Utility Affiliates, or (ii) IPPs

2018

- *Generation Developer* = Private Equity
- Estimate 75% + of the new generation in the past 10 years has come from Private Equity
- Investment Hypothesis
 - A bet on continued low price of gas
 - Better and improving technology (CCGT)
 - Lower cost of capital – structured financing
 - **DISPLACE** incumbent resources



With State Intervention (contract for differences) Market Clears at \$40



Load
200 MW

Subsidized Resource
Requirement = \$50/MW
Continue Operating

Competitive Resource

New Entry
Requirement = \$45/MW
Build & Invest

OFFERS

100 MW
into BRA at
\$0/MW

100 MW
into BRA at
\$40/MW

100 MW
into BRA at
\$45/MW

RESULTS

●
Clears at \$40
Contract
100 MW x \$10

● ●
Clears at \$40
Loses \$5/MW

●
Does Not Clear
Loses \$45/MW



Load
Pays \$8,000
200 MW x \$40
+ \$1,000
Contract =
\$9,000

Federal Government



Unexpected Result?

Subsidy is paid by the competitors in the federally regulated market, not by consumers in the subsidizing state.

State Government



Consequence of Cost Shift

Merchants lose opportunity to earn competitive revenues