

Beyond Big Data - Deecarbonization

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Think about this!



• 1,000,000,000,000,000,000

What Are You Going to Do?

2

54.5

2,600,000

15

2.5

2,000,000

0.5

3

1.1

29.7

39

1

11,000

48,700

100,000

30

Think About This too

- 3500 Generation sources to tens millions of generation sources
- Impacts of IoT
- Impacts of Transactive Energy
- Impacts of Transportation Electrification

Think About This

- US residence - 8 MWH
- Electric sedan - 7 MWH
- Electric - 12 MWH
- Level 2 AC charger is 8 KW
- Residence is 1KW

Most Aggressive Plan

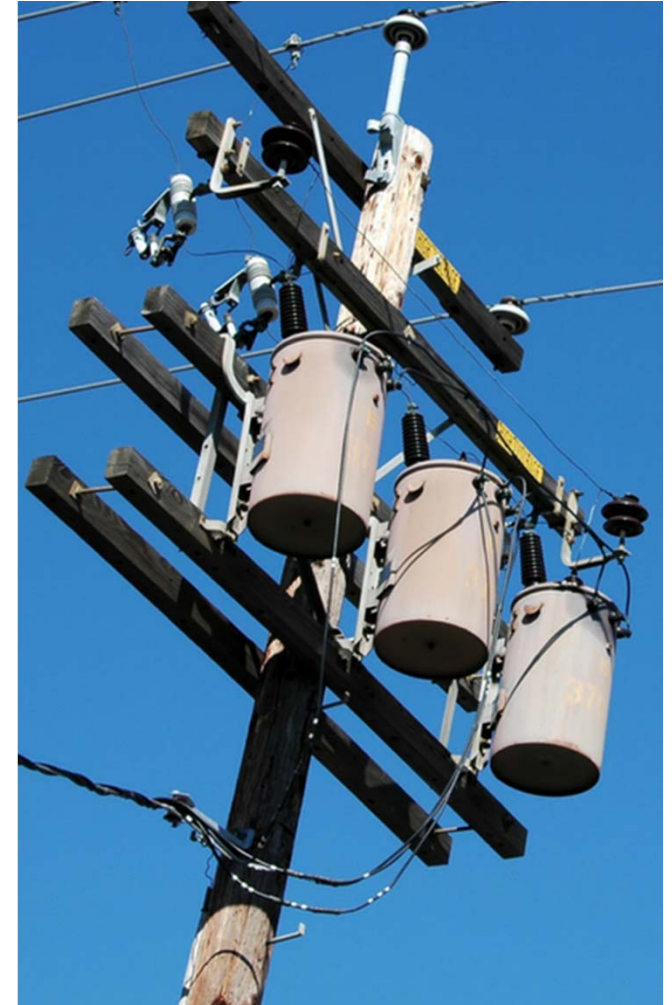
- Stop fossil fuel by 2030
- Convert 62,000,000 homes to electricity for heating
- Replace 272,000,000 cars with electric cars



Lets take a circuit view

- 4.8 KV circuit – 4/0 – 300 homes and 12 farms
- Current load – non-peak – 324 KW
- Current load – peak – 1.5 MW

- Aggressive plan 2030
- Daytime – 3.6 MW (planting season)
- Nighttime – 5.1 MW (charging cars)



Time

- 7-year retention of data that has an impact on billing.
- 8760 hours in a year
- 4-15 minute intervals in an hour
- 245,280 retained intervals per energy consuming device

Measurements

- Price offered
 - Price accepted
 - Energy consumed (KWH or KVAH)
 - Demand (KW or KVA)
 - Voltage (V)
 - Device health
 - Accept or decline offer
-
- 7 or 8 measurements per phase per device

A Household

- 20 to 80 breakers
- 1 to 5 devices per breaker
- Where to aggregate

- Assume 45 devices per household

Transactive Energy

- Distribution circuits have 1 to 50,000 customers
- 3 phase and single-phase in the US.
- Most of the rest of the world they are 3 phase
- 130,000 circuits in the US

- That means 4 markets per circuit or 520,000 markets in the US
- In Europe there are roughly 200,000 circuits/markets

Putting it together

- 11,479,104,000,000,000 stored readings for the US (that is Quintillion)

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Questions?

Please wait for
the **microphone**



State your
name & company

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