



Cage Match or Happy Couple?

Engineering Simulation Models and Billing Analysis

B O N N E V I L L E
POWER ADMINISTRATION



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2015 IEPEC Conference — Long Beach, California

IEPEC Long Beach 2015

CAGE MATCH



SENSATIONAL MAIN EVENT



HEAD
TO
HEAD



**JOSH
"BILLING ANALYSIS"
RUSHTON**

VS

**JUSTIN
"ENGINEERING MODEL"
SPENCER**

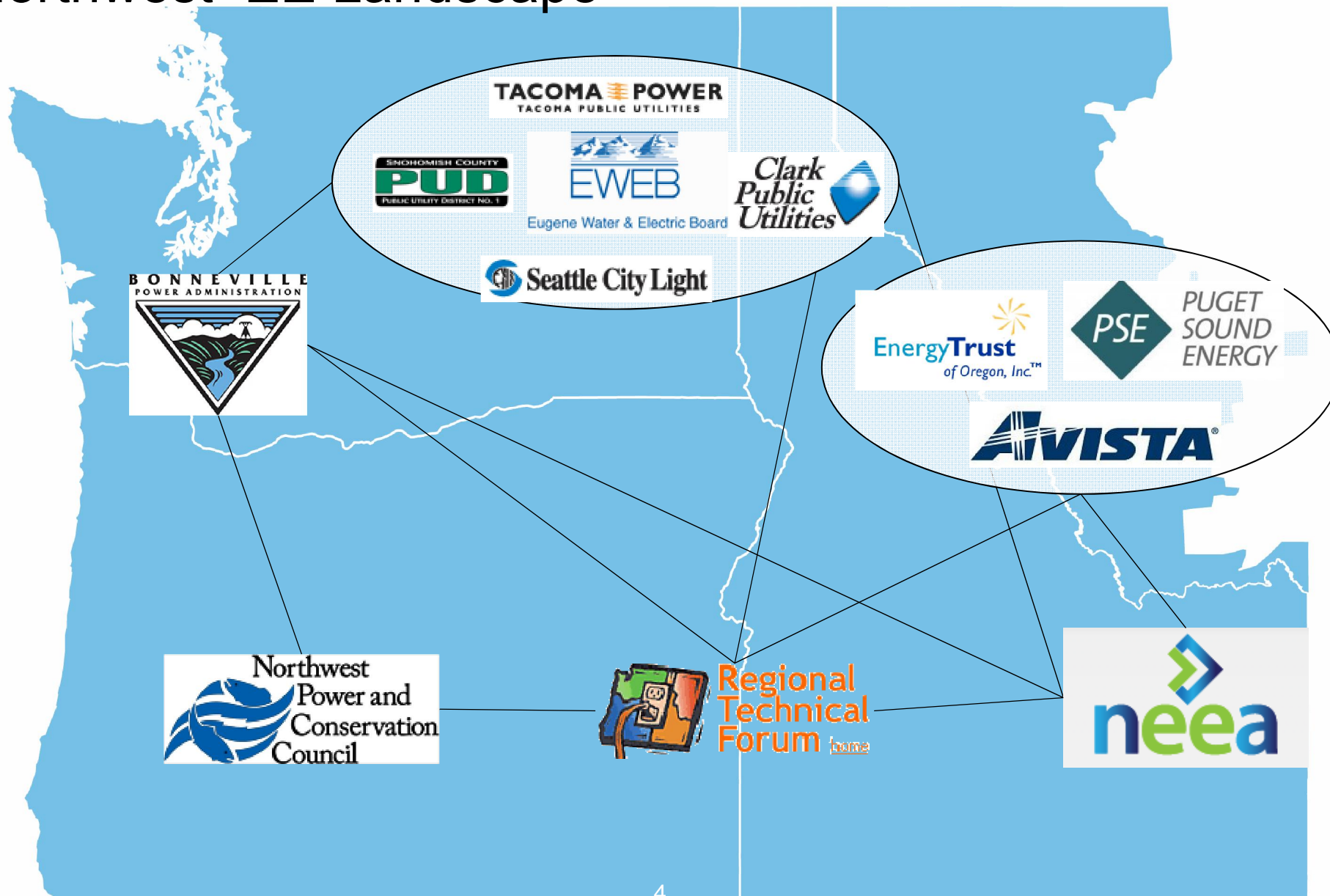


**MICHAEL
"MR GUIDELINES"
BAKER**

VS

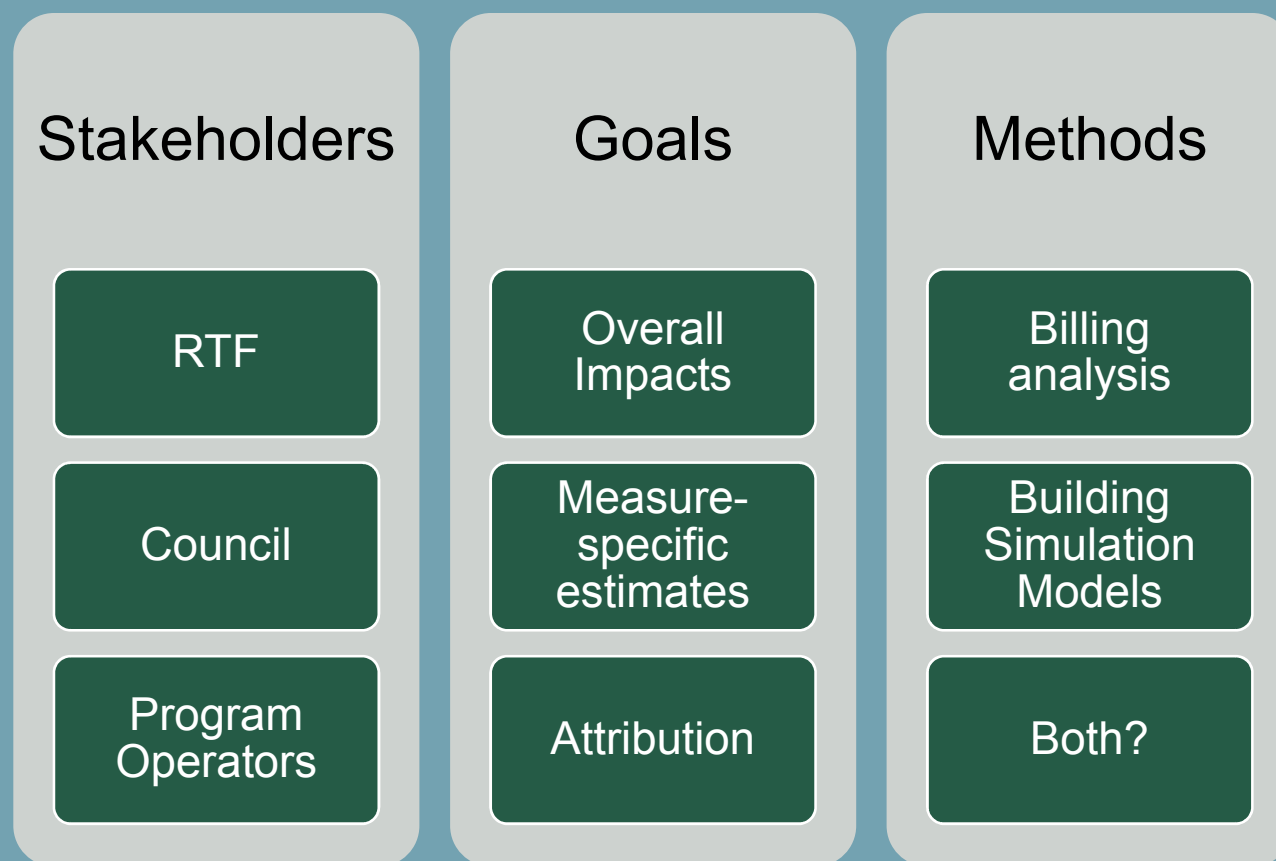
**DAVID
"RAISING HELL"
BAYLON**

Northwest EE Landscape

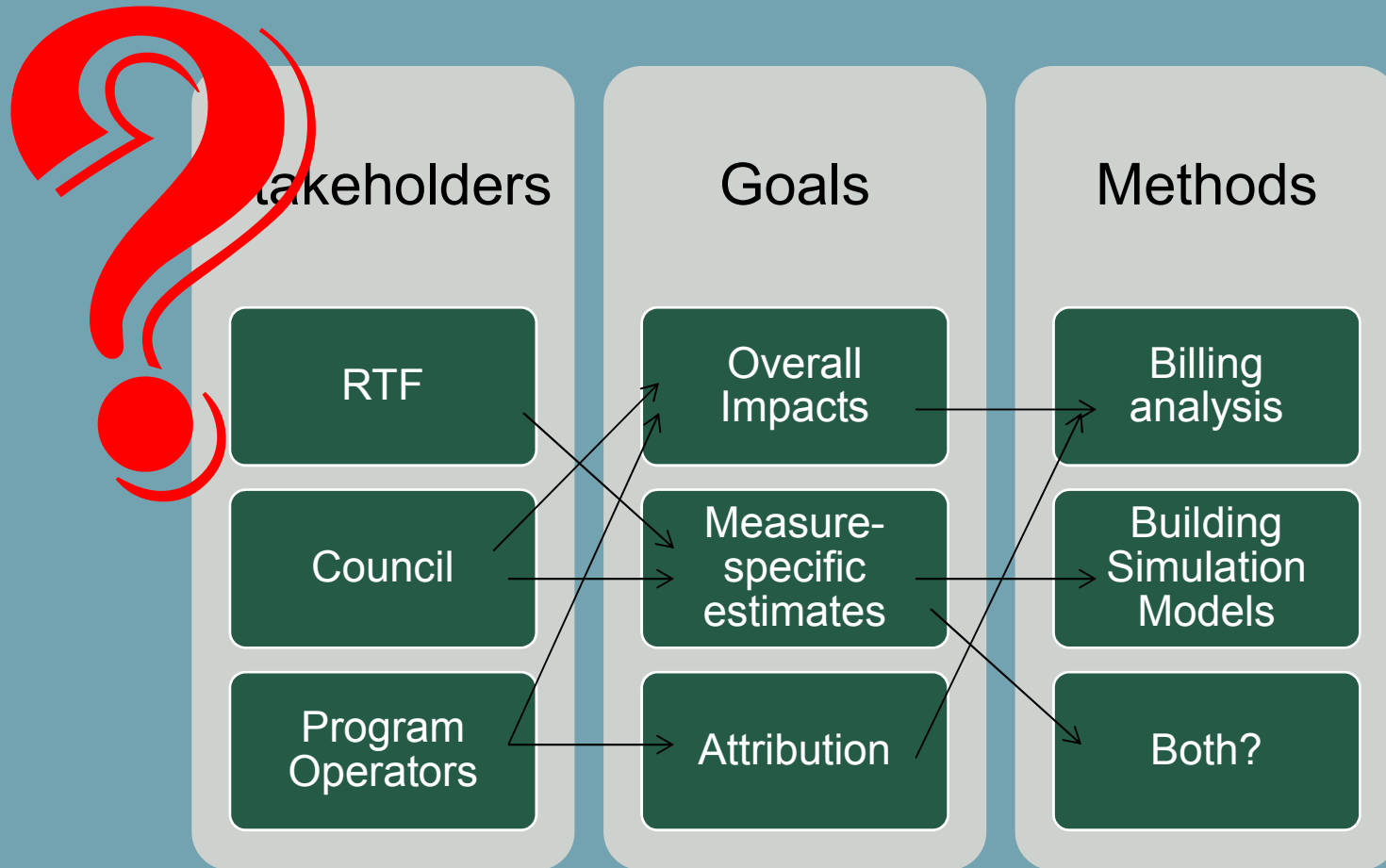




Lining up Methods with Goals



Lining up Methods with Goals



CAGE MATCH



**BILLING
ANALYSIS**

VS

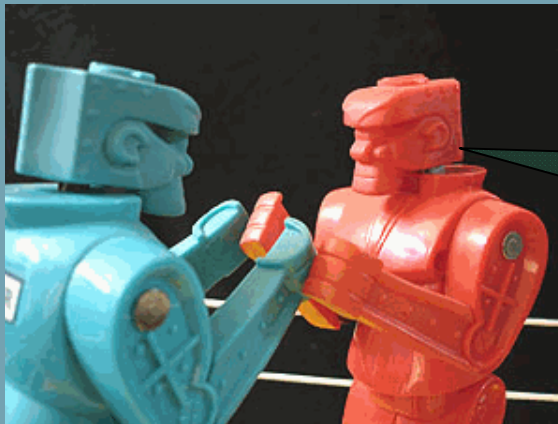
**ENGINEERING
SIMULATION**

Left Corner: Billing Analysis

Changes in usage with billing data

Easy data, reliable and inexpensive

Granularity, small signal, why, baselines



*You didn't let the
temperature set point
vary??*

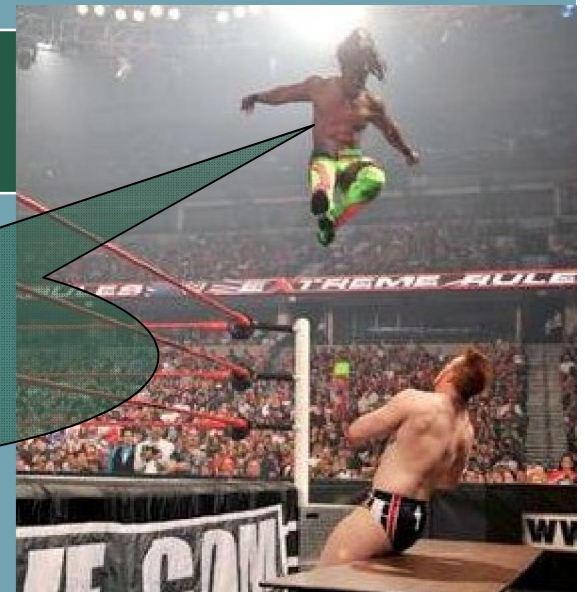
Right Corner: Engineering Simulation

Measure-specific savings using simulation tool

Thermodynamics, variations, small, baselines, interactions

Occupants, input heavy

You want how many millions for sub-metering?



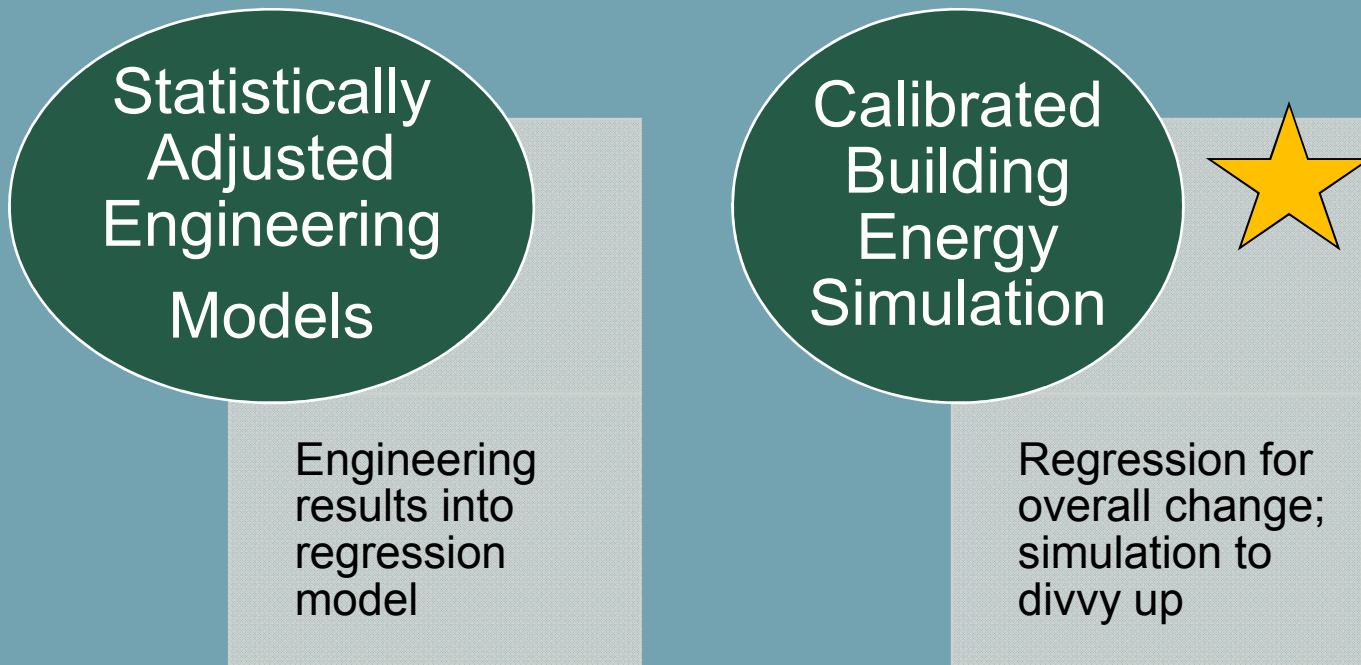
Happy Couple?

I estimate savings reliably on aggregate, but lack precision to estimate measure savings



I understand physical drivers and can extrapolate, but usually lack the data to accurately estimate savings

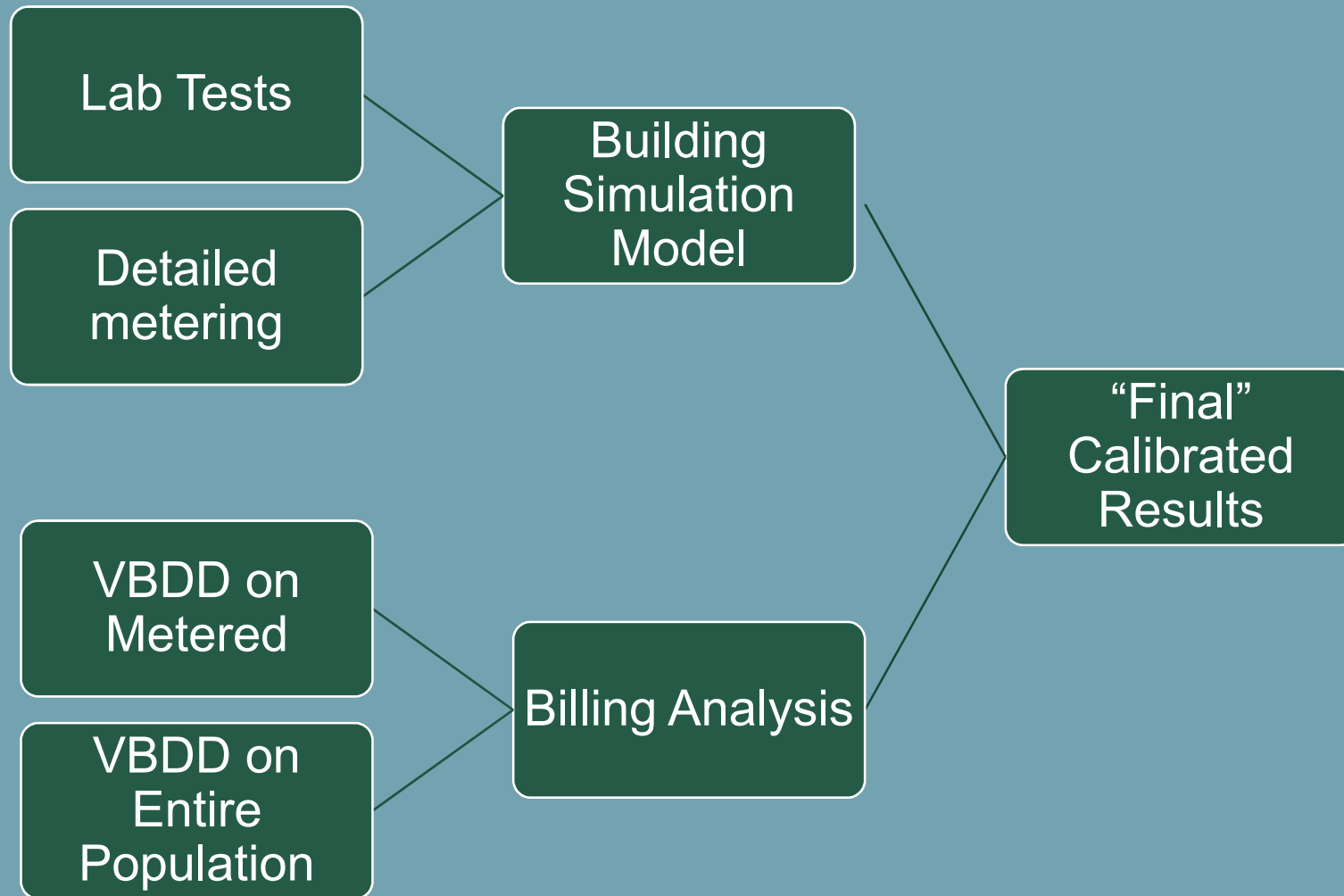
Combined Approaches



NW Ductless Heat Pumps



DHP Research

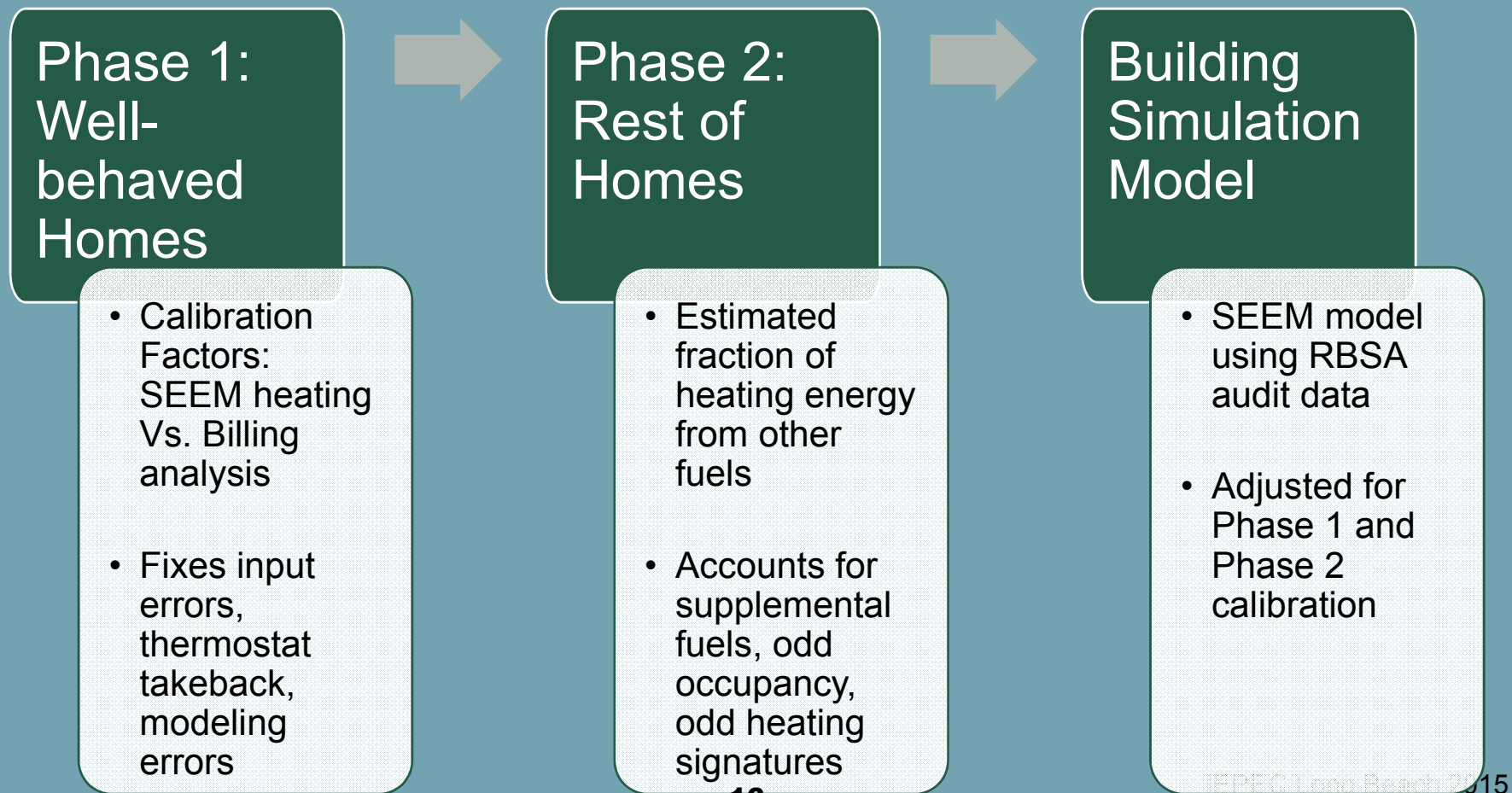




**Supplemental
Fuels**

**Metering
vs Billing
VS
RBSA**

Weatherization



**You're killing
my
programs!**

Granularity

**Supplemental
Fuels**



Conclusions

**Better off with
both methods.**

**But it often
hurts getting
the answer.**



**Maybe it's both
cage match and
happy couple?**

Questions?

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