

DRAFT
Impact Evaluation
of the UES
Portfolio

2016 Activities



Evaluate UES energy savings for consistency with the savings claimed



Provide strategic feedback to improve program operation and measures

And sometimes assess savings to inform RTF estimates



What's
Our Plan?

What's Our Plan?

Target areas with
largest savings

1

2

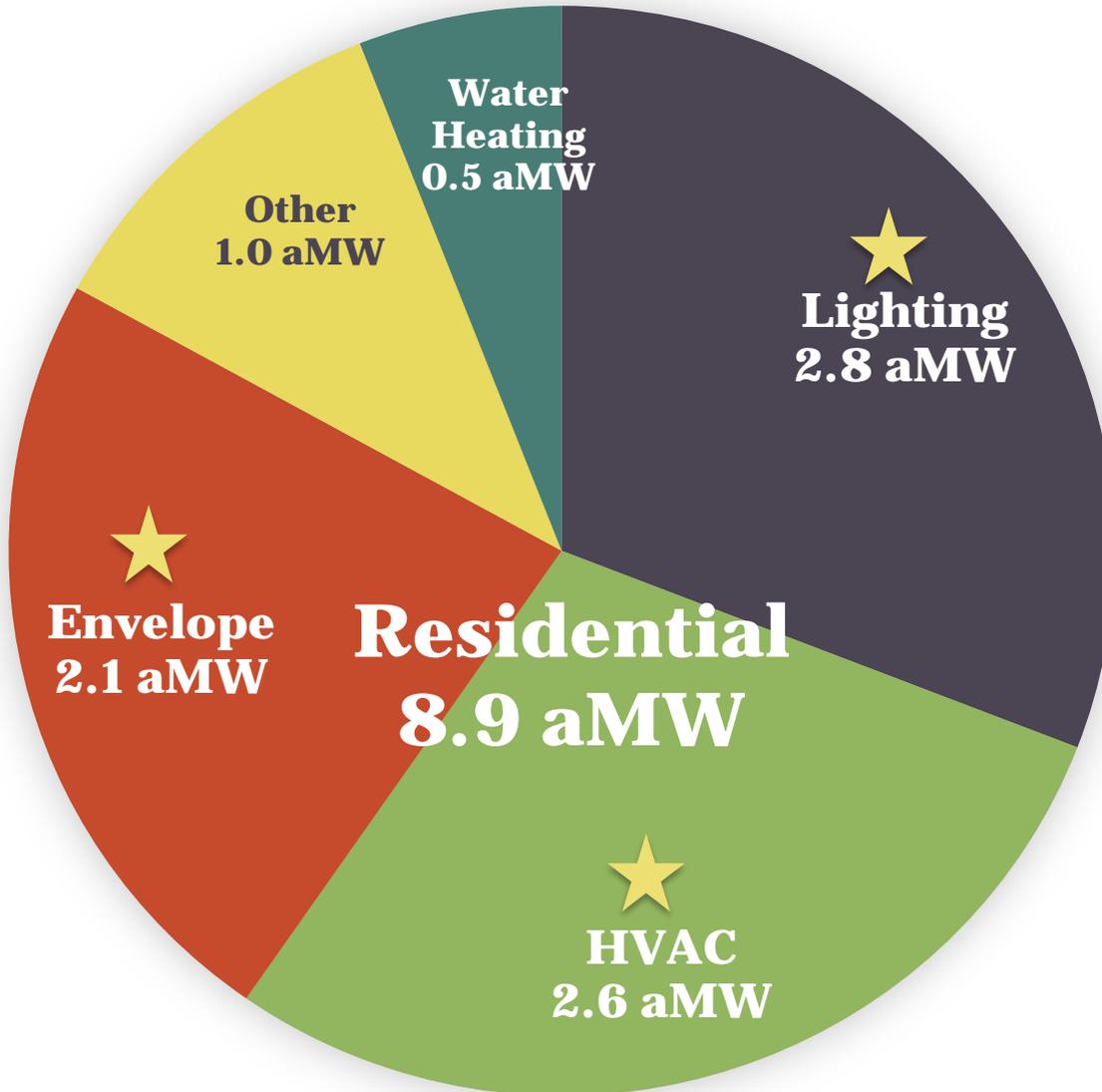
What's Our Plan?

Make it as easy as possible
(minimal burden/cost)



Where Are The Largest Savings?

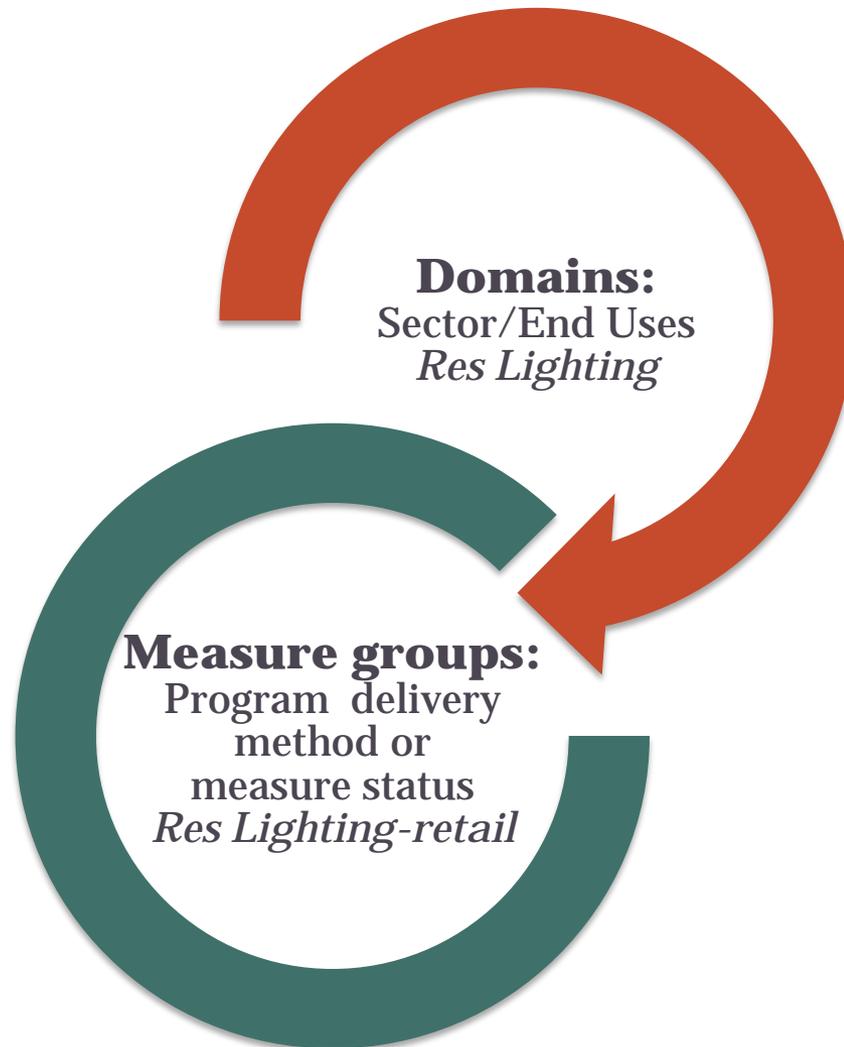
FY2015 UES data
summarized from IS2 data pull



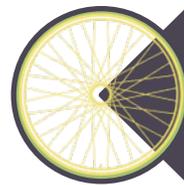
Ag/Industrial
1.0 aMW

Commercial
0.8 aMW

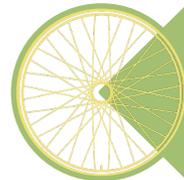
How Can We Design An Efficient Evaluation?



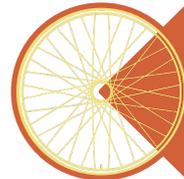
What Should We Consider When We Select the Evaluation Approach?



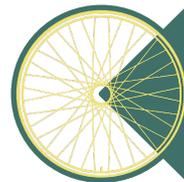
Measure Status



Contribution to Savings

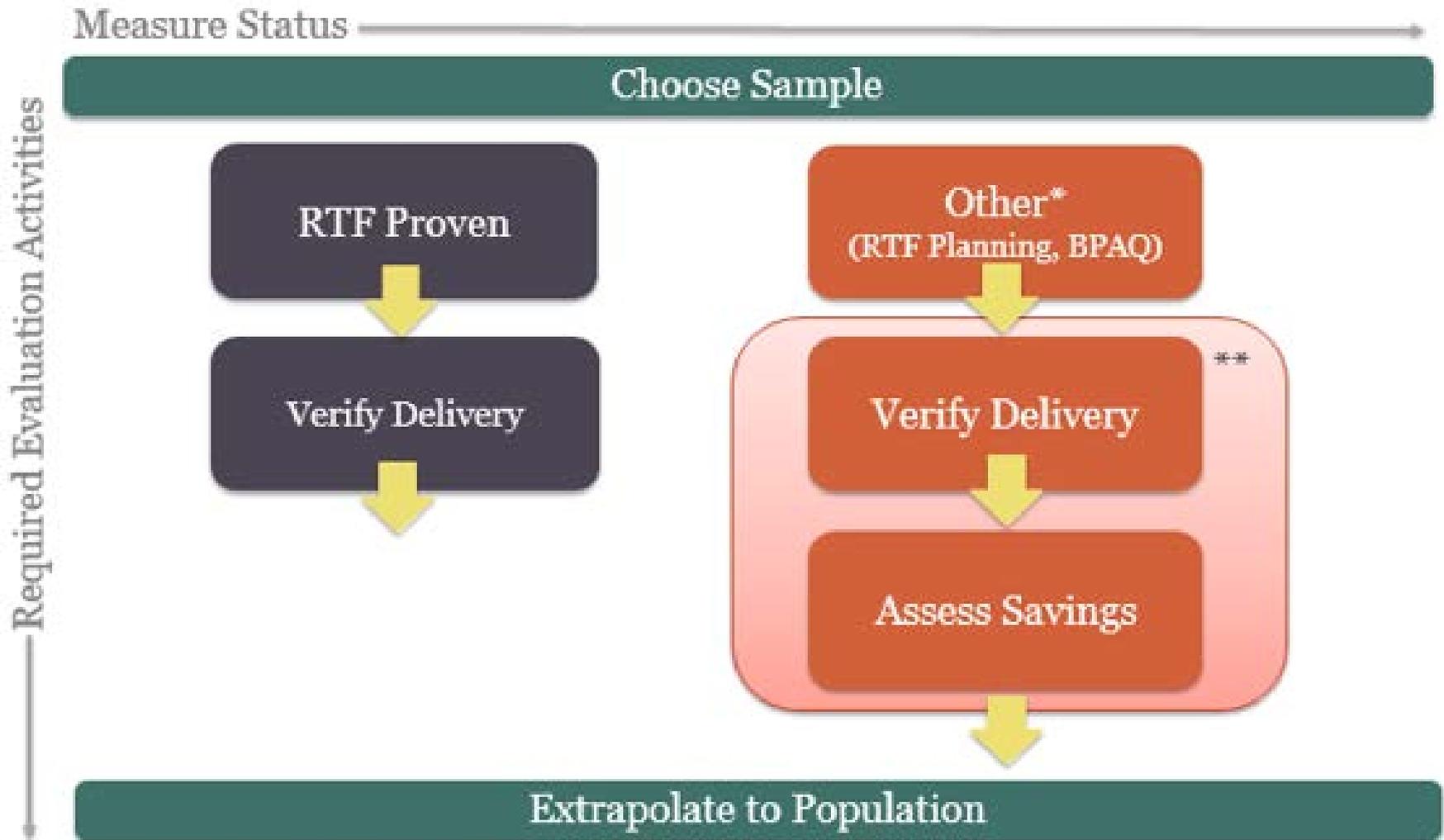


Uncertainty In UES
Savings Value



Strategic Importance

Taking Advantage of Measure Status

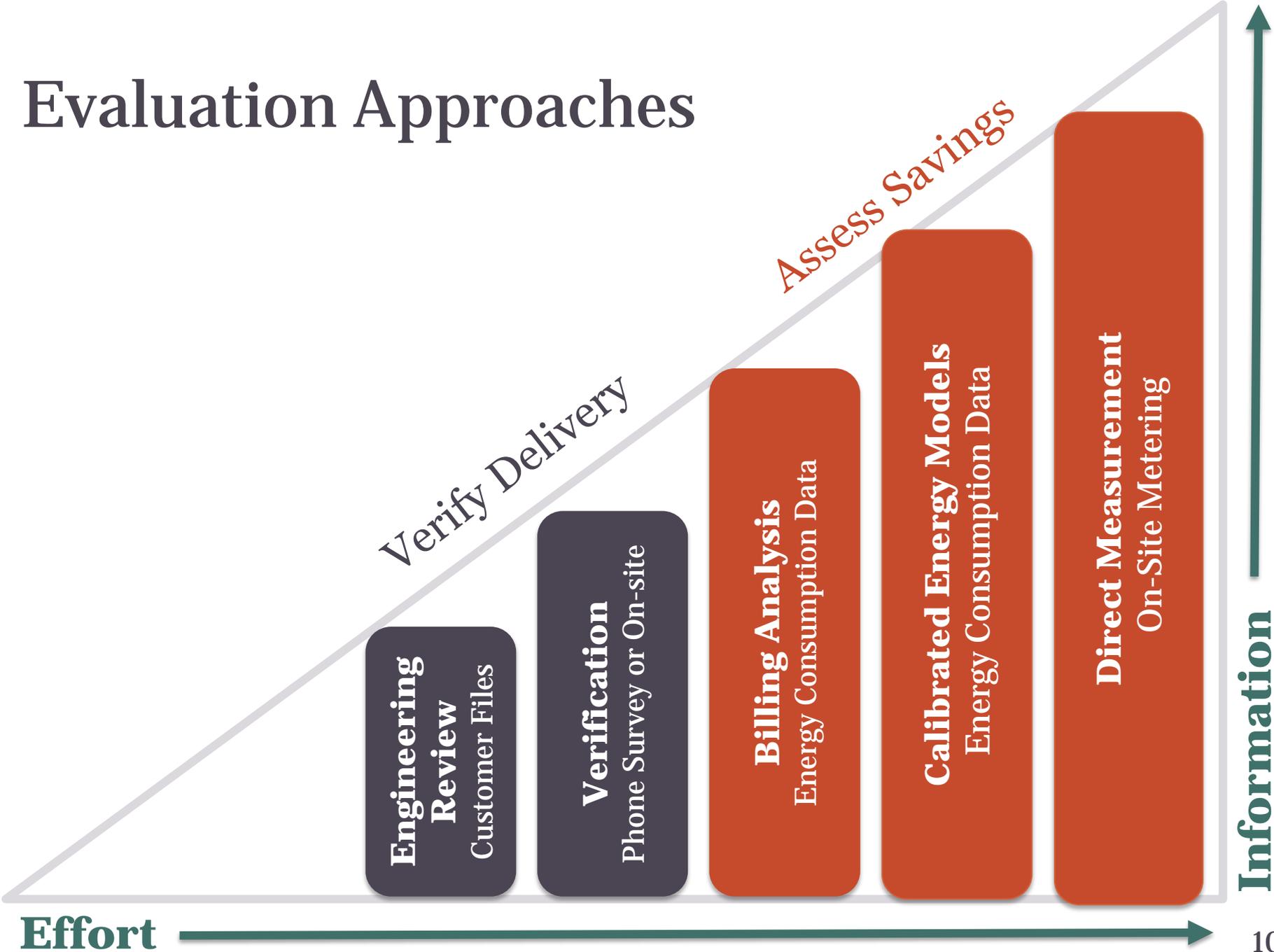


**RTF Provisional status requires applying approved research*

***These two steps might occur separately or simultaneously, depending on the approach.*

Source: Navigant interpretation of RTF Guidelines

Evaluation Approaches



Assess Savings

Verify Delivery

Engineering Review
Customer Files

Verification
Phone Survey or On-site

Billing Analysis
Energy Consumption Data

Calibrated Energy Models
Energy Consumption Data

Direct Measurement
On-Site Metering

Effort

Information

2016 Evaluation Domains, Measure Groups & Approaches



Residential
Lighting



Residential
Envelope



Residential
HVAC

Residential Lighting



Residential Envelope



Residential HVAC



Engineering Review

Retail & By Request
Customer Files

Billing Analysis

Envelope, Duct sealing & DHP with FAF
Billing data, if issues - customer files and phone surveys

Engineering Review

HPs & CCS
PTCS QA/QC data

Residential Lighting



RTF Proven



Largest Residential Domain
Largest 2 Delivery Mechanisms

2016 Evaluation

- Retail
- By Request

*Small sample of Direct Install and Fixture to understand data
Non-Request bulbs excluded – tiny savings*

What Will We Do?

Measure Group	Approach	Data Source	
		3rd Party Imp.	Utility
Retail		Simple Steps Program Data	Customer File*
By Request			

**Utilities will only be asked to provide IM-required data not available via third party implementers.*

- Use customer files/program data to verify delivery & pass through all UES value assumptions

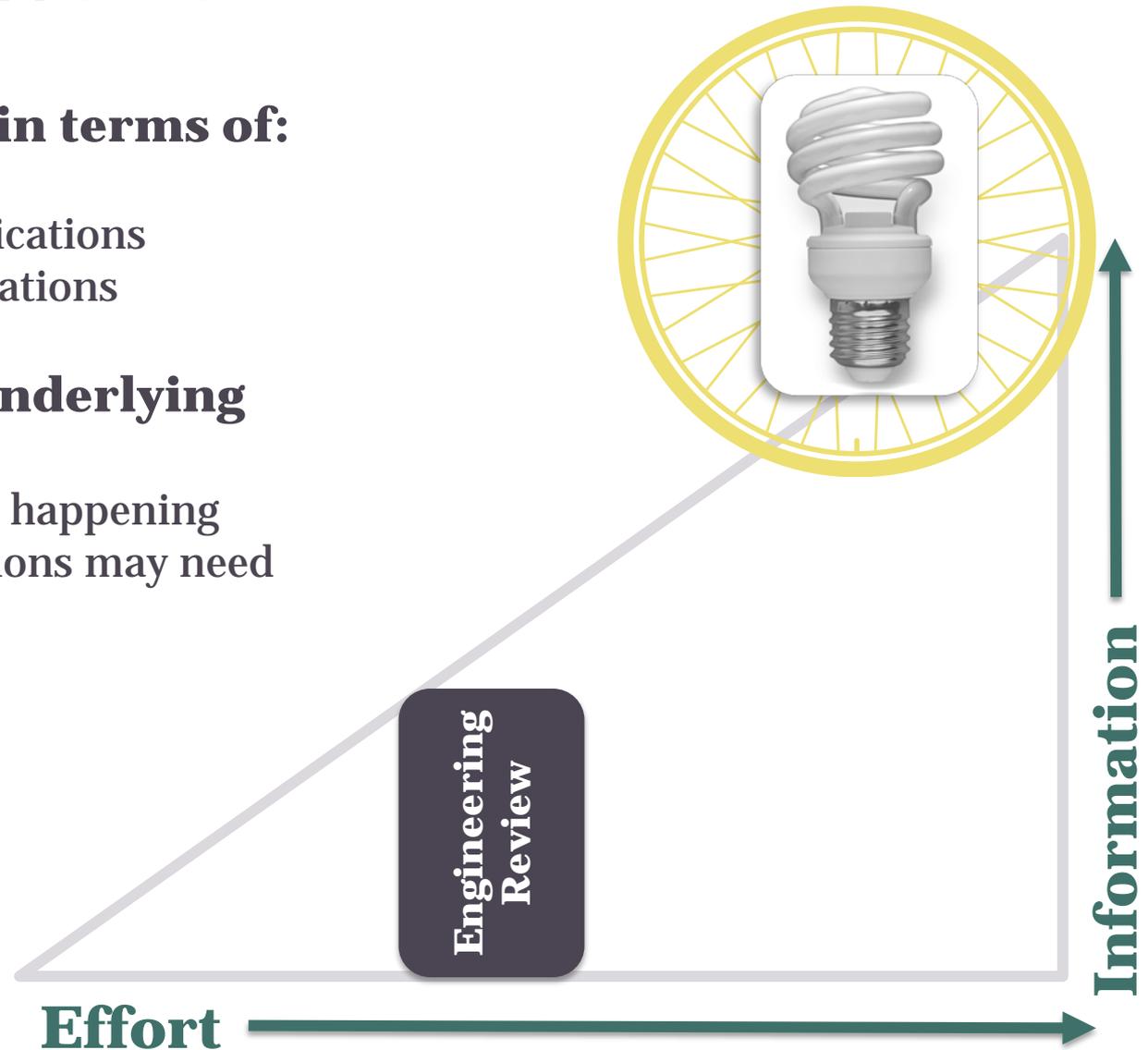
What Will We Learn?

Verifies delivery in terms of:

- Quantity
- Measure specifications
- Measure applications

Passes through underlying assumptions

- Other research is happening
- Storage assumptions may need future review



Residential Envelope



RTF Proven



3rd Largest Contribution to Residential Savings



Uncertainty In UES Savings Value



Strategic Importance

2016 Evaluation

- Insulation
- Windows

Air Sealing not included- tiny savings, difficult to evaluate

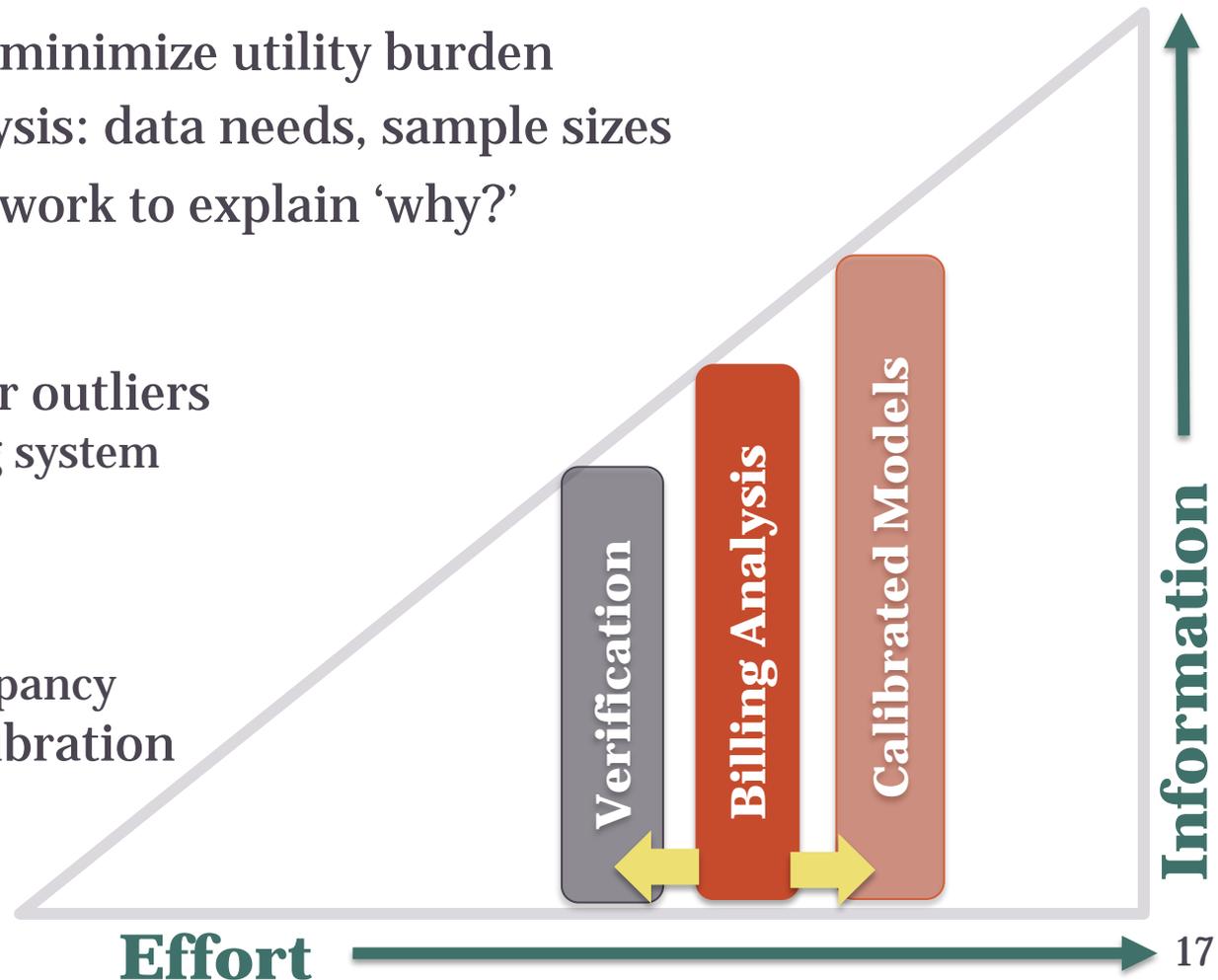
Billing Analysis

– Staged Approach

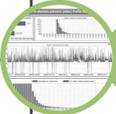
- Billing analysis; minimize utility burden
- Pilot billing analysis: data needs, sample sizes
- If needed: more work to explain ‘why?’

Second stage:

- Customer files for outliers
 - baseline heating system
 - home size
- Phone surveys
 - secondary heat
 - changes in occupancy
- SEEM model calibration



What Will We Do?

Measure Group	Approach	Data Source	Second Stage Outlier Analysis
		Utility	
Insulation	 Billing Analysis	Energy Consumption Data*	SEEM model calibration
Windows		Customer File**	Phone surveys

**Evaluation targets census of billing data; sample where unfeasible*

***Staged request.*

- Initial - evaluation would love any customer information that is easy for utilities to provide (project files, auditor data)*
- Stage two - evaluation may request a sub-sample of customer files for outlier projects*

Pilot Billing Analysis

Working with PTCS data,
SCL & Tacoma Data

Testing to inform final
plan & data request



Draft Findings

Appears supplemental
heating is important

Might not request
additional PTCS data

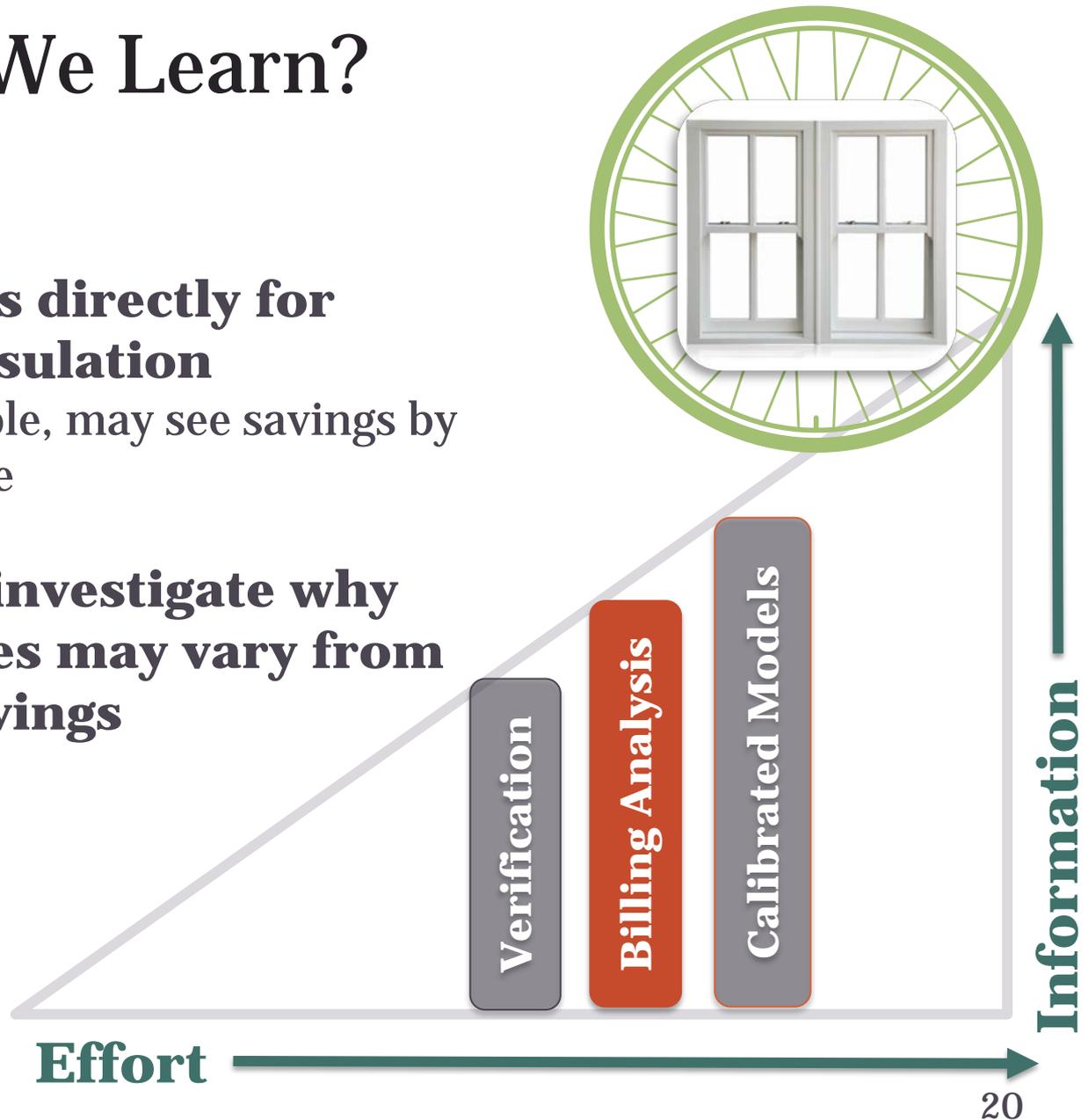


What Will We Learn?

Estimate savings directly for windows and insulation

- If enough sample, may see savings by HZs or measure

Opportunity to investigate why savings estimates may vary from RTF claimed savings



Residential HVAC

2016 Evaluation



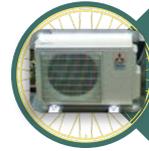
Mix of Measure Status



2nd Largest Contribution to Residential Savings



Uncertainty In UES Savings Value

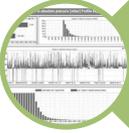


Strategic Importance

- Ductless Heat Pumps replacing Forced Air Furnaces
- Duct Sealing
- Heat Pumps
- Commissioning, Controls & Sizing

- *Ductless Heat Pumps (all other)- postponed*
- *Thermostats excluded- tiny savings*

What Will We Do?

Measure Group	Approach	Data Sources	
		3 rd Party Imp.	Utility
Duct Sealing	 Billing Analysis	QA/QC Data	Energy Consumption Data* Customer Files**
Ductless Heat Pumps replacing Forced Air Furnaces			
Heat Pumps - All	 Engineering Review	QA/QC Data	
Commissioning, Controls & Sizing			

**Evaluation will target a census of energy consumption data for sampled utilities, a sample may drawn used where this is unfeasible*

***Staged request.*

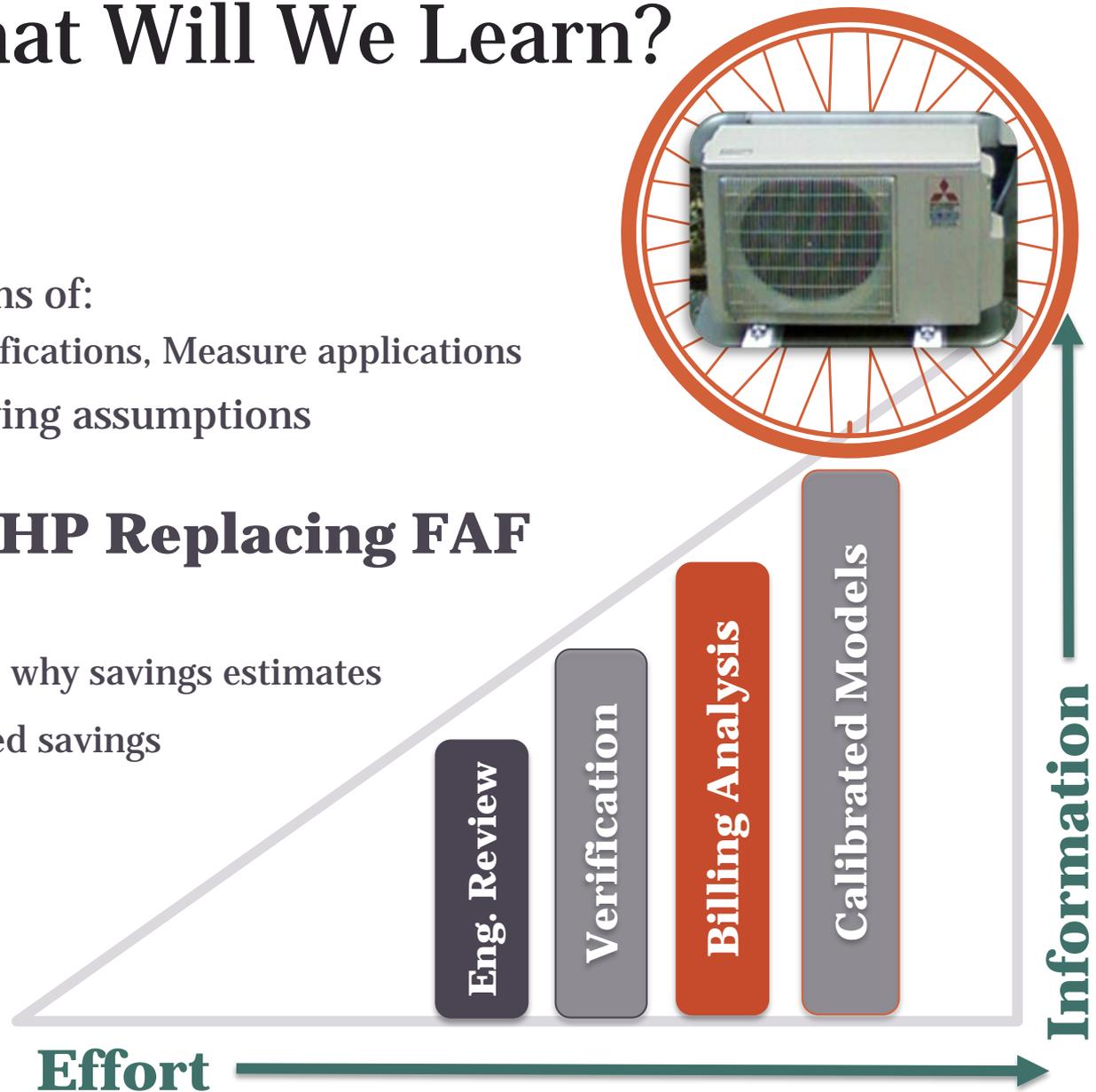
What Will We Learn?

HP & CCS

- Verifies delivery in terms of:
 - Quantity, Measure specifications, Measure applications
- Passes through underlying assumptions

Duct Sealing & DHP Replacing FAF

- Estimate savings directly
- Opportunity to investigate why savings estimates may vary from RTF claimed savings
 - Phase 2 outlier analysis might provide insights



Preliminary Sampling Method

Determine savings contribution of each utility for each measure group. Split into:

Large contributors
(>5%)

Certainly sampled

Tiny contributors
(smallest savers
up to 5% of
group)

Excluded from sample

Medium contributors
(2-5%) and small contributors (rest)

Random sample of these

But, exclude if had FY2014 COTR oversight

Number of Utilities in each Stratum*

Stratum	Insulation	Windows	DHP replacing FAF	DHP - All Other	Duct Sealing	Lighting - By Request	Lighting - Retail
Large Contributors	4	2	6	4	5	4	4
Medium Contributors	11	14	9	7	5	4	6
Small Contributors	32	39	28	37	15	6	8
Tiny Contributors	61	53	65	60	83	94	90

*Current draft sample design is based on partial FY2015 data.

** HPs not listed because evaluation will use PTCS QA/QC

Customer Files

Measure Group	Number of Utilities	Target Number of Projects
Retail	7	75*
By Request	6	65*
Heat Pumps – All**	n/a	(60**)
Commissioning, Controls & Sizing	n/a	(51**)

**Includes Simple Steps and non. Sample size for request customer files is smaller than this number.*

***These sample sizes include data from the PTCS QA/QC site registry and do not require customer files.*

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Billing Data

Measure Group	Number of Utilities	Target Number of Projects
Insulation	10	~1700*
Windows	15	~2500*
Duct Sealing	10	~1700*
Ductless Heat Pumps replacing Forced Air Furnaces	15	~800*

**Evaluation will target a census of energy consumption data for sampled utilities, a sample may drawn used where this is unfeasible*

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Data Collection Approach

Early
March

Early heads up on sample

Early
April

COTRs notify utilities of evaluation sample

- Sample, data needs, templates

Early
April

Two brown bags to explain data requests & approaches

April-
May

Data collection

- Individualized support for utilities
 - Single point of contact on evaluation team
 - Multiple data transfer modes (secure FTP, email, fax, mail, on-site support)
 - Non-disclosure agreements available with utilities

Coordination with Region

COTR Oversight

- Working with COTRs to coordinate with oversight

BPA Non-Energy Benefit (NEB) Research

- May leverage outlier phase of envelope & HVAC measures

Residential Building Stock Assessment (RBSA)

- Watching timing of RBSA, will consider in contact protocols to mitigate confusion

Draft 2016 UES Evaluation Schedule

Domain	Data Collection	Analysis	Final Report
Res-Lighting	April – June	Mid-June – Early-September	Late-September
Res-Envelope	April – June	June – September	Mid-December
Res-HVAC	April – July	June – September	Mid-December





Comments welcome on
draft evaluation plan by
March 24th
(available March 10th)



Questions?
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