

# RESIDENTIAL DR BASELINE

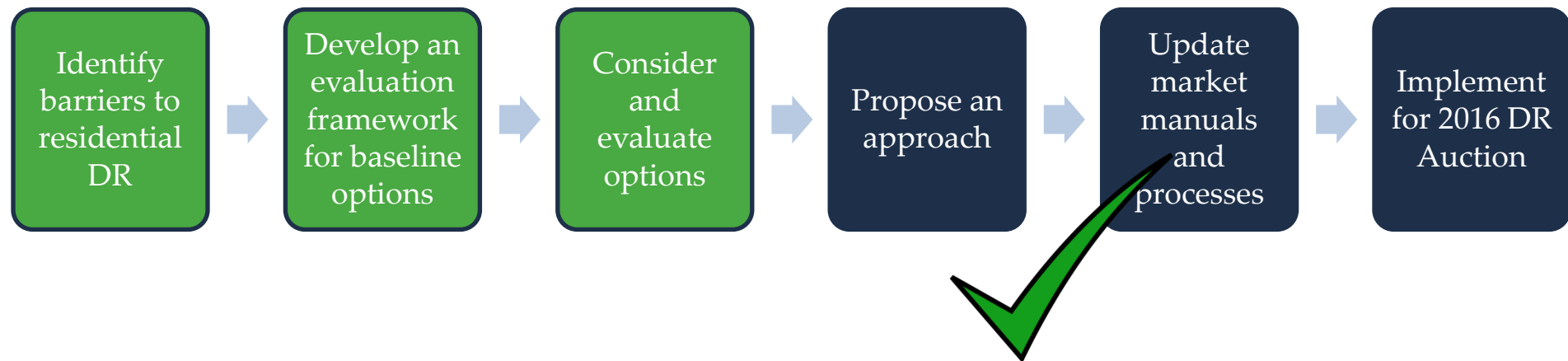
Demand Response Working Group  
Meeting #5

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November 22, 2016

# This year's goal

- Implement an alternative baseline methodology to include RDR participation for the 2016 Demand Response Auction



# Objective of Residential DR (RDR) Baseline

- To reduce unnecessary barriers for residential load to participate in demand response
- To measure with reasonable accuracy the delivery of demand response
- To balance administrative requirements of the design with the need to maintain auditability

# Stakeholder Feedback

## Access to data

- Contributor enrollment and access to contributor measurement data could present a barrier to participation of RDR and/or prevent a DR market participant (DRMP) from meeting its capacity obligations

## IESO Response

- At this time, the process of extracting data from the SME requires some form of agreement between the aggregator and the LDC; the IESO is assessing the requirements and next steps for making data more readily available in the future
- Contributor consent is required for data to be disclosed to a third party

# Stakeholder Feedback

## Capacity Obligation

- The DRAP should not be penalized if they are unable to meet their auction capacity obligation due to lack of access to measurement data

## IESO Response

- DRAPs must be confident they can meet their capacity obligation before submitting offers into the DR Auction to ensure integrity of the auction process and results; given information provided regarding measurement data access provided through the DRWG, failure to access this data is not considered outside of DRAP control
- If a capacity obligation can not be met, the DRAP must either buy out of that obligation or transfer it to another DRAP

# Stakeholder Feedback

## Contributor Data Required Monthly

- Is the premise/universal ID an identifier that is collected for each customer by the LDC? Are there any cases where a customer would not have one or would have multiple?

## IESO Response

- The IESO has determined that a premises ID or universal ID will not be required. Instead, the LDC name and account # will be satisfactory to uniquely identify the contributor
- Required monthly individual contributor data is therefore limited to contributor address, LDC name and LDC account number

# Stakeholder Feedback

## Peaksaver

- Can peaksaver units be used for RDR?
- Control groups for peaksaver devices have been established; will they meet new guidelines for RDR?

## IESO Response

- The IESO continues to fund the peaksaverPLUS program; while the program is in effect, peaksaver devices are not eligible for the DR auction
- Once peaksaver resources are transitioned to the market, the control group must meet the same requirements as that of other residential resources

# Stakeholder Feedback

## Baseline methodology

- Allowing the use of Propensity Score Matching Control Group (PSM) which uses non-contributor or non-participant data to build a control group from the larger population of utility customers, instead of RCT, will allow aggregations smaller than 1MW to participate in residential DR

## IESO Response

- The minimum required aggregation of 1 MW will not be changing at this time; in the longer term, the IESO can investigate whether the threshold can be reduced from 1 MW to a lower threshold and whether a different baseline approach could help to facilitate this at which time options such as the PSM control group can be discussed



# Stakeholder Feedback

## Control Group

- Control group should be able to serve multiple treatment groups, and contributors should be allowed to move between control and treatment groups within the month
- The IESO should consider creating the control groups to ensure unbiased selection

## IESO Response

- The IESO seeks a balance between flexibility for DRMPs and manageability for IESO settlement and audit, while ensuring accuracy of the baseline methodology

# Stakeholder Feedback

## Control Group

- If DRMPs choose the control group, will the IESO create a tool to ensure randomization?

## IESO Response

- DRMPs will randomly assign contributors to either control or treatment groups, and report on the randomization strategy or tool utilized; randomization will be confirmed through audit

# Stakeholder Feedback

## Same Day Adjustment

There were conflicting stakeholder viewpoints:

1. The adjustment *is not* required for accuracy, may reward pre-cooling, and discourages pre-curtailment
2. The adjustment *is* required to correct for discrepancies between control and treatment groups, and linear regression (LR) could provide an enhanced adjustment

# Same-Day Adjustment Refresher

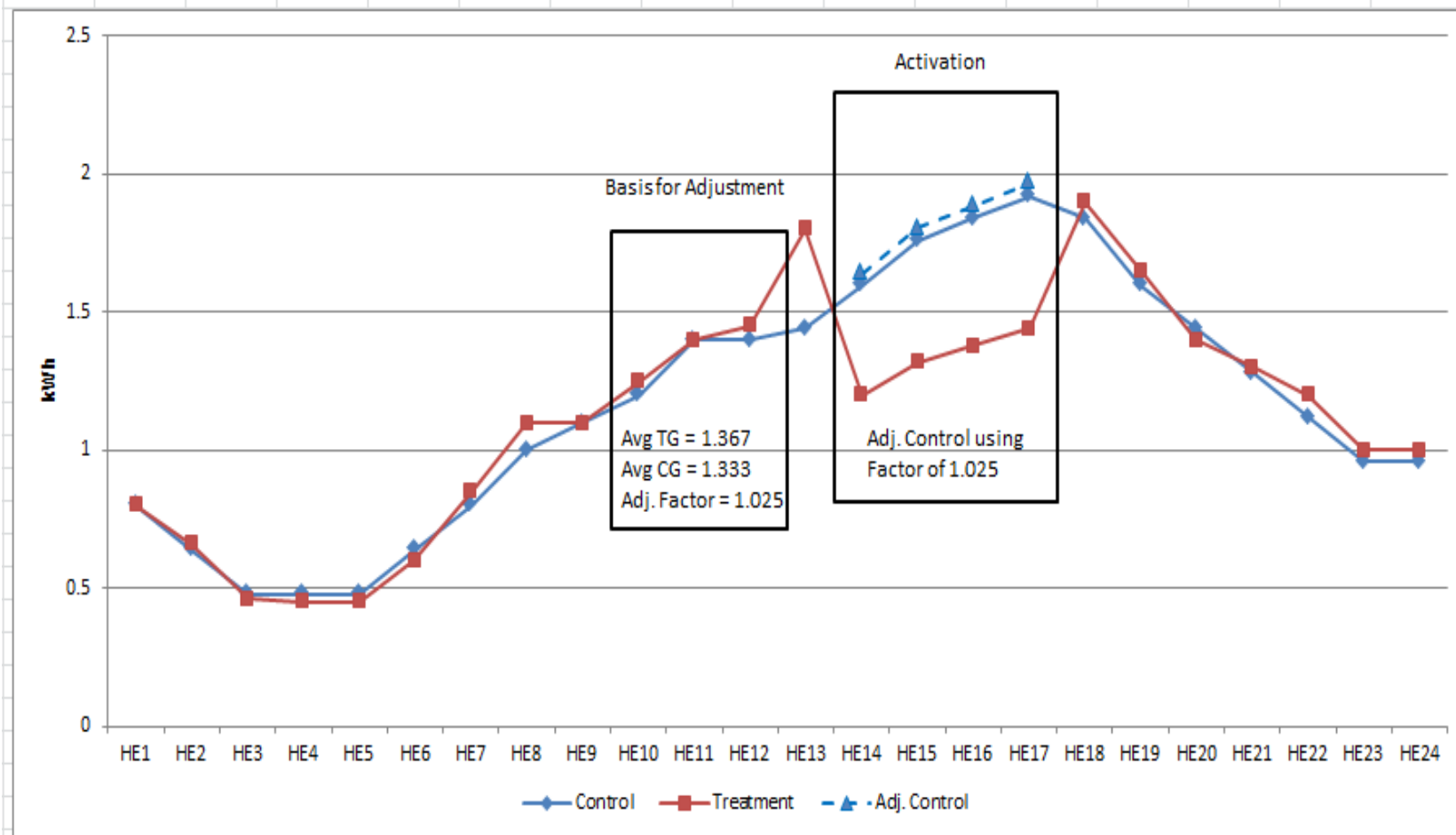
- Ideally, prior to activation, the control group's average load would perfectly align with the treatment group's average load, but there may be times where this is not the case
- A same-day adjustment will be applied to the control group load to equalize the control and treatment groups based on their respective loads in the 3 hours starting 4 hours before activation
- Typically the adjustment will be small

$$\text{Adjustment Ratio} = \frac{\text{3 hour avg Treatment Group Load, 1 hour prior to dispatch}}{\text{3 hour avg Control Group load, 1 hour prior to dispatch}}$$

HE9	HE10	HE11	HE12	HE13	HE14	HE15	HE16	HE17	HE18
	Adjustment window				Activation Period				

- The adjusted control group load = control group load X Adj. Ratio

# Example: RCT with adjusted Control Group



# Same Day Adjustment

## Comment #1

The adjustment *is not* required for accuracy, may reward pre-cooling, and discourages pre-curtailment

## IESO Response

- Many stakeholders have indicated that the adjustment is required for accuracy
- Pre-cooling generally impacts only the hour immediately before activation
- Pre-curtailment can cause reliability issues because the IESO relies upon energy bids to be reflective of incremental capability to reduce consumption when the resource is scheduled

# Same Day Adjustment

## Comment #2

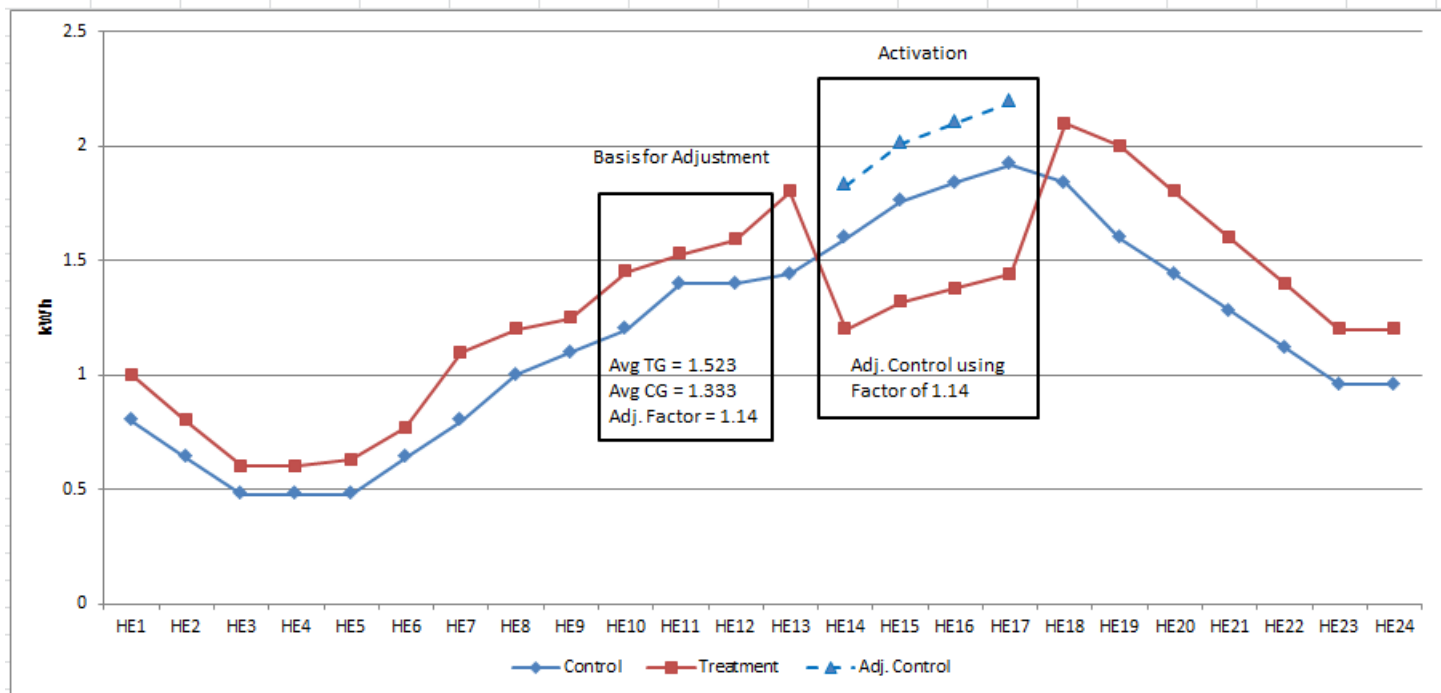
The adjustment *is* required to correct for discrepancies between control and treatment groups, and linear regression (LR) could provide an enhanced adjustment

## IESO Response

- Linear regression (LR) offers a different perspective by considering the relative trend of the treatment and control groups over the adjustment period
- However, IESO evaluation of LR indicates this method may not improve accuracy of the baseline and may reduce accuracy
- The Availability Window, especially in the Summer, is a range of hours and can cover a variety of conditions where the load can be increasing or decreasing during the adjustment window

# Proposed Same Day Adjustment Ex. 1

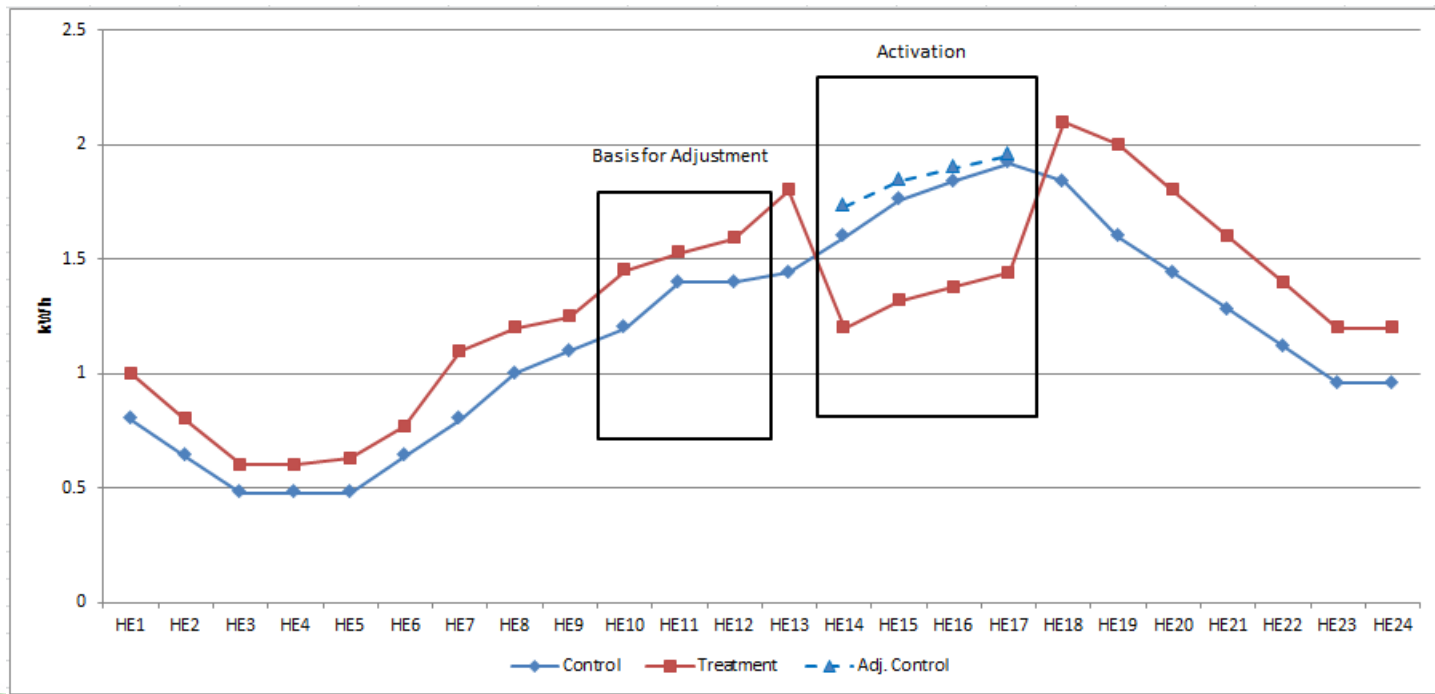
- Average treatment group contributor is increasing more slowly during adjustment period than the average control group contributor





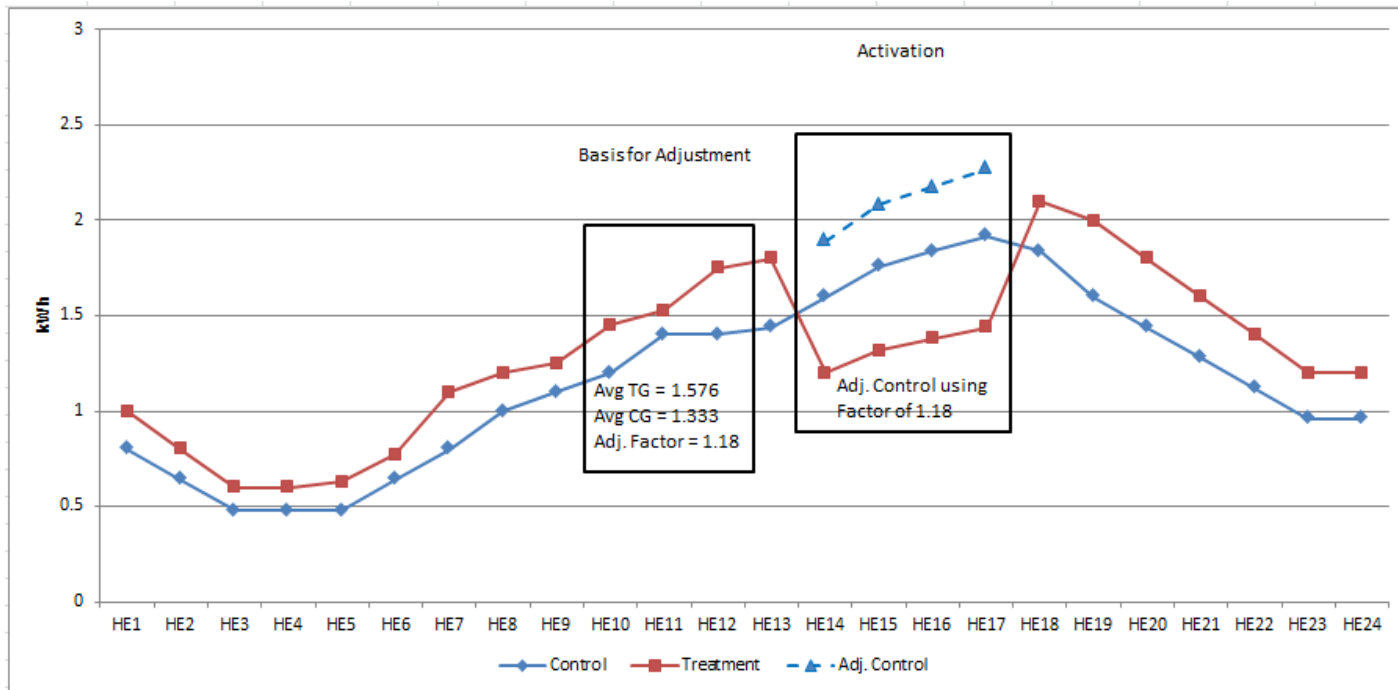
# Adjustment with Linear Regression Ex. 1

- Linear regression considers the relative slopes
- Since the treatment group has a flatter trend during the adjustment period, less DR is recognized



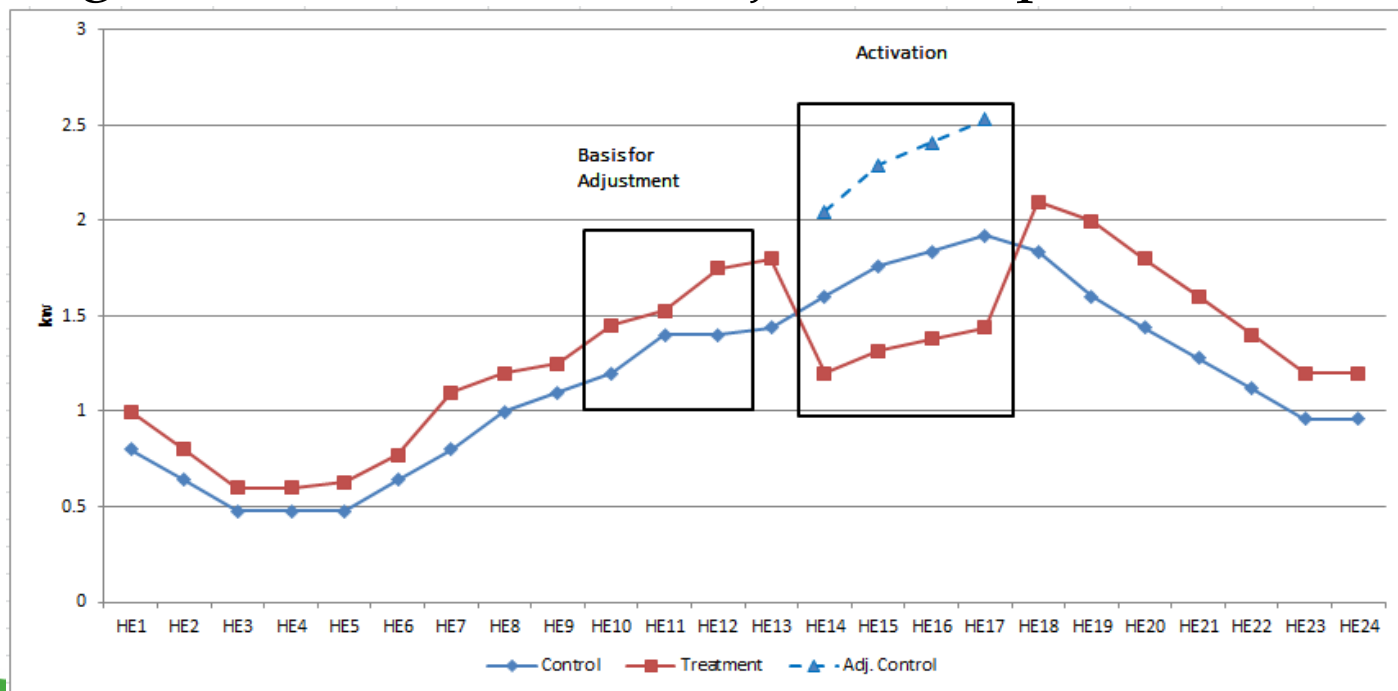
# Proposed Same Day Adjustment Ex. 2

- Average treatment group contributor is increasing more rapidly during adjustment period than the average control group contributor



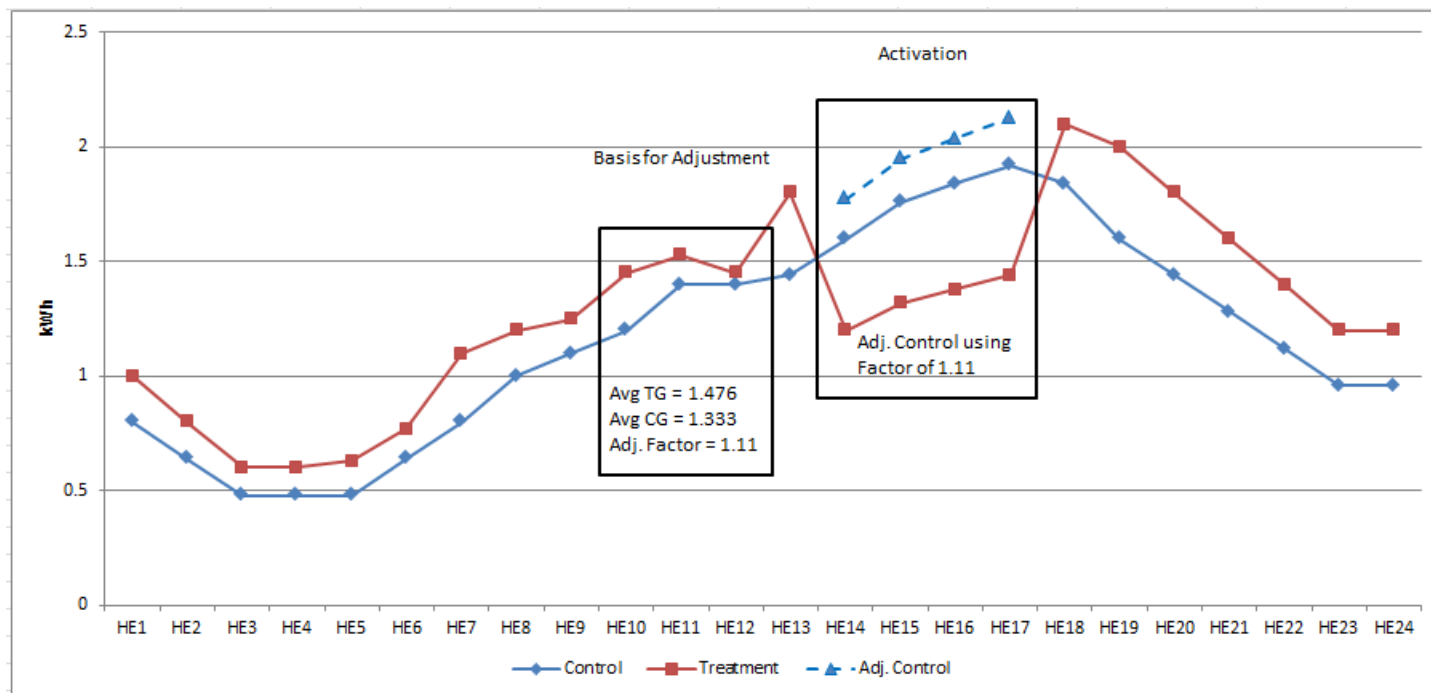
# Adjustment with Linear Regression Ex. 2

- Since the treatment group has a steeper trend during the adjustment period, more DR is recognized
- This may provide additional incentive to pre-cool during the last hour of the adjustment period



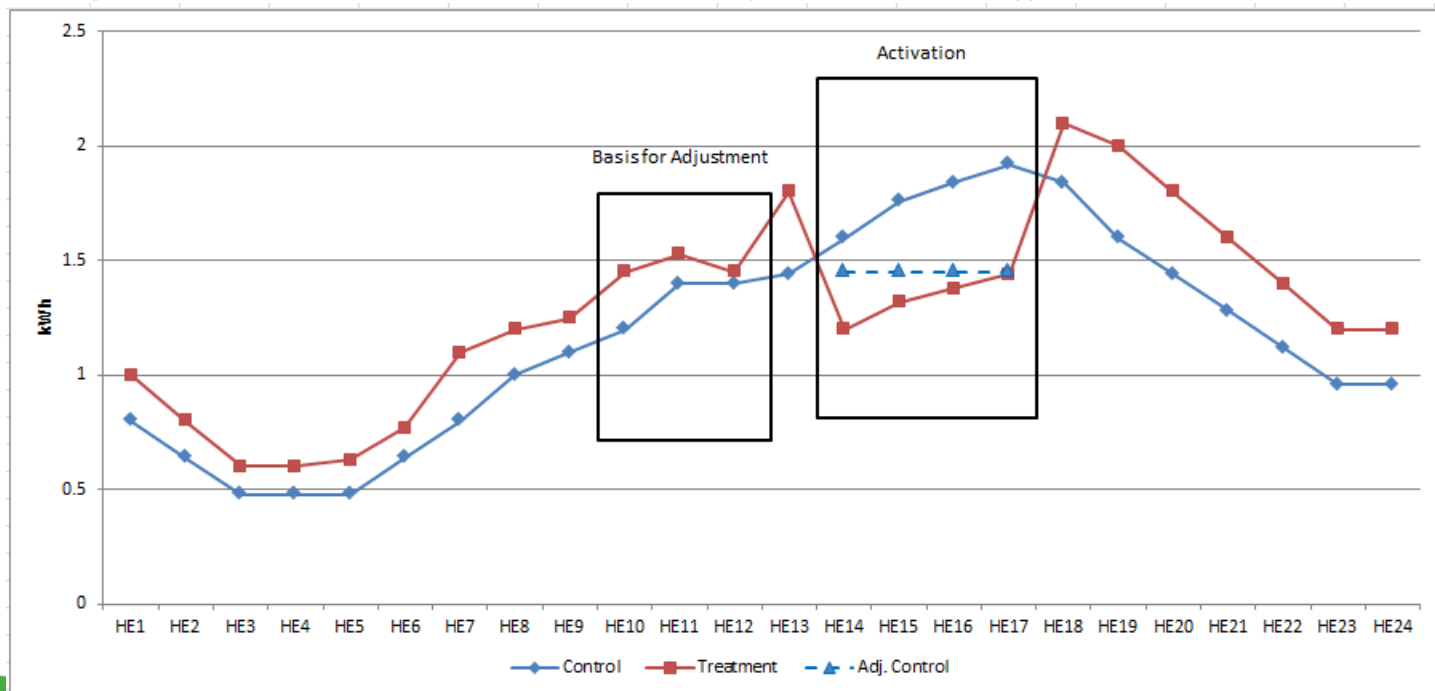
# Proposed Same Day Adjustment Ex. 3

- Average treatment group contributor is not increasing during adjustment period



# Adjustment with Linear Regression Ex. 3

- Since the treatment group trend is flat during the adjustment period, the DR is limited
- This may provide additional incentive to pre-cool during the last hour of the adjustment period



# Next Steps and Feedback

- Please provide written feedback by December 2, 2016
- To provide feedback, contact [engagement@ieso.ca](mailto:engagement@ieso.ca)