



ENERGY-SAVING TWEAKS: THE SEQUEL - HOW LONG DO THEY PERSIST?

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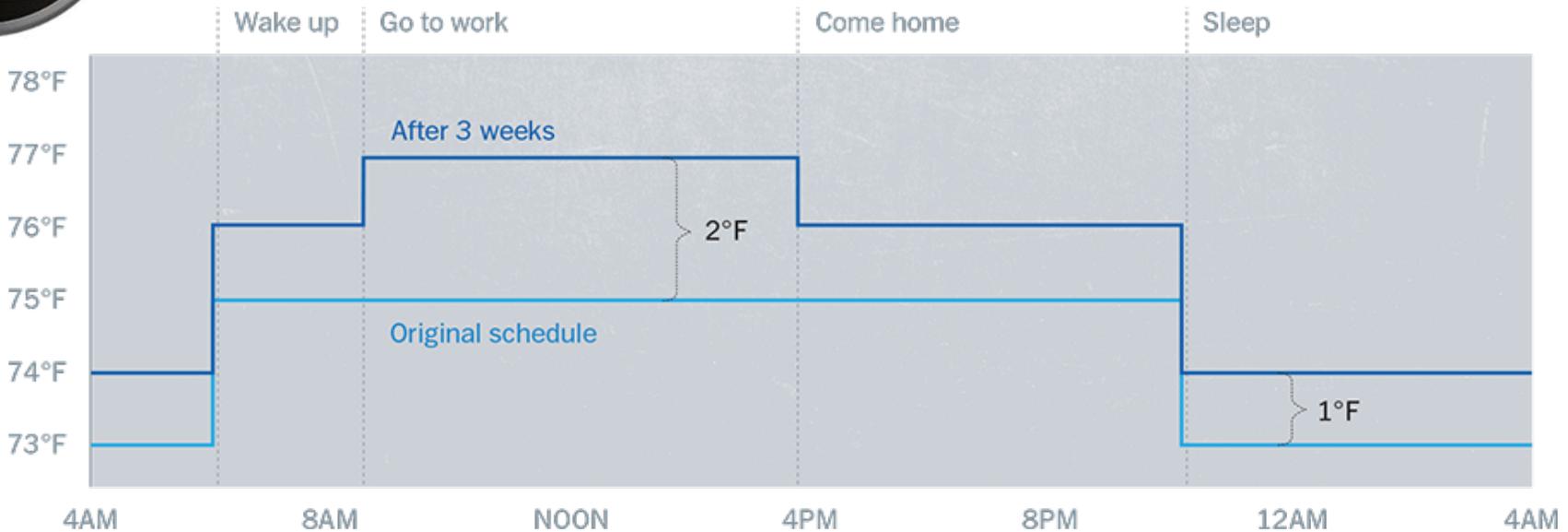
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WHAT IS NEST'S SEASONAL SAVINGS (SS) PROGRAM?

The SS program makes small changes to scheduled setpoints over time to make them more efficient.

- When a customer goes back into cooling mode the next season their tweaked schedule from the end of the previous season persists until they make manual changes.
- If they sign up for seasonal savings again, further changes will be made to the already tweaked schedule.



Source: <https://nest.com/support/article/What-is-Seasonal-Savings>

RESEARCH THEMES

Developing an understanding of the persistence and year-over-year feasibility of the solution are critical to determining the longevity of SS as a program.

1

Year 2 Acceptance and Savings

- How many customers opt-in to the program two years in a row?
- Are there incremental savings from a second year of adjustments?

2

Persistence

- Do customers return to their original setpoint schedules the summer after adjustments are made?
- How long do the initial savings last?

2018 DEPLOYMENTS

In 2017 and 2018, National Grid and Commonwealth Edison partnered with Nest to offer SS to customers within their respective service territories with existing Nest thermostats. Both programs are deployed as Random Encouragement Designs (REDs).



ILLINOIS

Program start: June 22

37,235 thermostats offered program in 2017 and 2018

- 56% of devices offered for a second time in 2018 enrolled in 2018

37,266 in a persistence group offered the program in 2017 but not in 2018



MASSACHUSETTS

Program start: July 2

13,951 thermostats offered program in 2017 and 2018

- 47% of devices offered for a second time in 2018 enrolled in 2018

YEAR 2 ACCEPTANCE AND SAVINGS

HOW MANY CUSTOMERS OPT-IN TO THE PROGRAM TWO YEARS IN A ROW?

Based on results from MA, approximately $\frac{2}{3}$ of customers who enrolled the first year enrolled again the second year and $\frac{3}{4}$ of those who didn't enroll the first year didn't enroll the second year either.

2017 Status	2018 Status	
	Enrolled	Didn't
Enrolled	65%	35%
Didn't	27%	73%

YEAR 2 ACCEPTANCE AND SAVINGS

ARE THERE INCREMENTAL SAVINGS FROM A SECOND YEAR?

The SS program achieved average daily energy savings of 0.20 kWh-0.57 kWh per device offered the program, representing average savings of 1.5%-2.7% of cooling load.

Statistic	2018 Savings		
	MA (Offered SS 2017 and 2018)	IL (Offered SS 2017 and 2018)	IL Persistence (Offered SS 2017 and not 2018)
ITT Devices	13,962	37,235	37,266
Average <i>Daily</i> Energy Savings per ITT Device (kWh)	0.20 ± 0.10***	0.57 ± 0.16***	0.31 ± 0.16***
Average Savings (% of Cooling Load)	1.7% ± 0.87%	2.7% ± 0.73%	1.5% ± 0.74%
Average <i>Total</i> Energy Savings per ITT Device (kWh) ¹	17	55	30
Total Energy Savings (MWh)²	228	2,047	1,120

*** p<0.01

¹ Total savings per device is calculated as average daily savings per device x the number of days post tune-up start date.

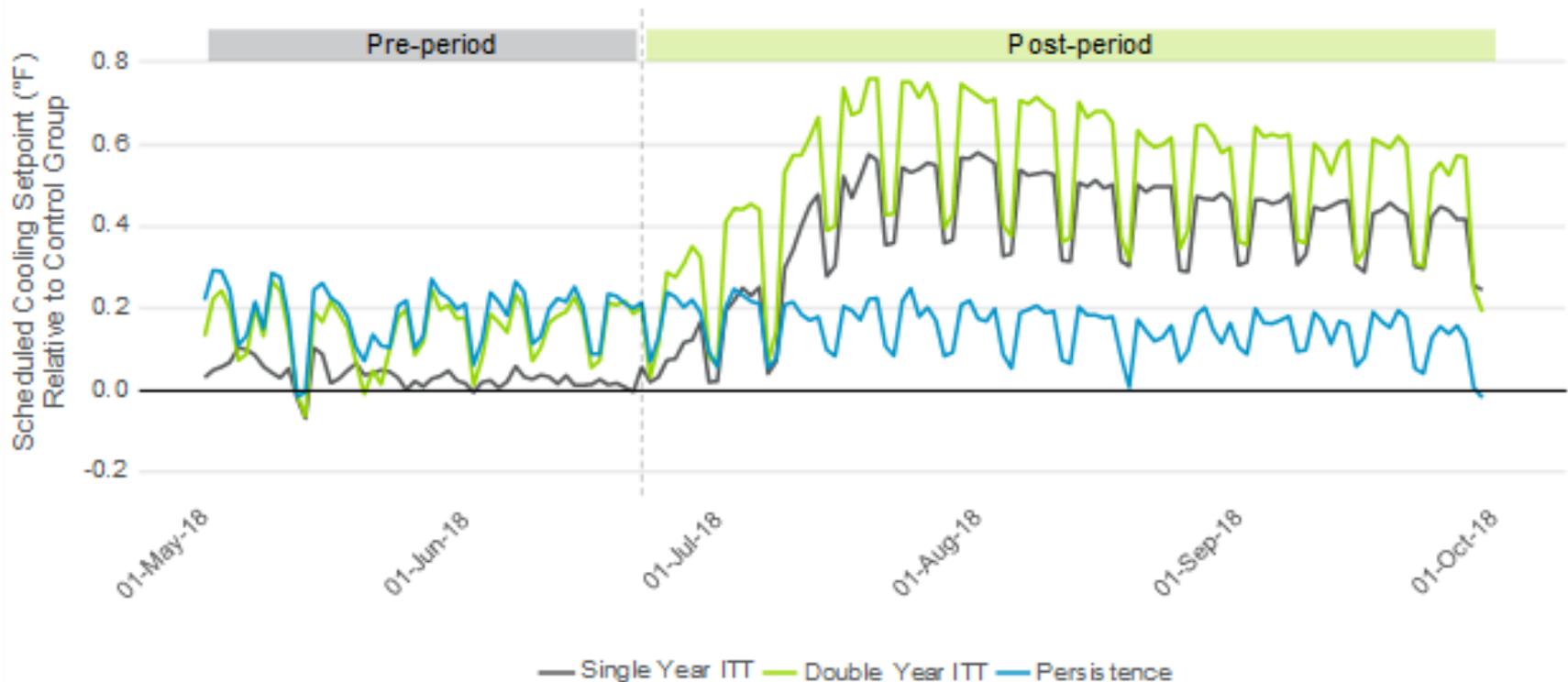
² Total savings is calculated as average daily savings per device x the number of device days post tune-up start date.

Source: Navigant Analysis of
2018 Summer Seasonal
Savings Programs

PERSISTENCE

DO CUSTOMERS RETURN TO THEIR ORIGINAL SETPOINT SCHEDULES THE SUMMER AFTER ADJUSTMENTS ARE MADE?

The ComEd persistence group (in blue) shows that customers keep their adjusted setpoints through the summer after they were adjusted, though there is a downward trend throughout the summer.



Source: Navigant Analysis of ComEd's 2018 Summer Seasonal Savings Program

PERSISTENCE

HOW LONG DO THE INITIAL SAVINGS LAST?

Based on results from IL, the setpoint differences were approximately half as high for the persistence group (0.15 degrees) vs. the 2018 cohort (0.38 degrees).

- This suggests an average treatment decay of roughly 50% the year after a device stopped receiving thermostat optimization, resulting in a measure life of two years.

ITT Group	Average Post-Period Setpoint Difference vs. Controls
2017 Cohort (Offered SS 2017 and 2018)	0.51
2018 Cohort (Offered SS 2018)	0.38
Persistence (Offered SS 2017 and not 2018)	0.15

Source: Navigant Analysis of ComEd's 2018 Summer Seasonal Savings Program

SUMMARY

1

Year 2 Acceptance and Savings

Based on MA, approximately two-thirds of customers enroll in SS two years in a row. Approximately one-quarter of customers enroll in the second year after not enrolling the first year.

Incremental energy savings were 1.7-2.7% (17-55 kWh) per device in Massachusetts and Illinois, amounting to sizeable reductions when aggregated over a large number of customers.

SUMMARY

2

Persistence

Customers who enroll in SS one year and are not offered it the next continue to have higher setpoints than the control group in the second summer.

Based on IL, the persistence group setpoint differences compared to the control are approximately half as large as customers getting the first year of treatment in the same summer suggesting a 2 year measure life.

THANK YOU

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