WattTime

“Giving people the power to choose cleaner electricity”

Who We Are

• High-tech nonprofit dedicated to accelerating the development & spread of new sustainability techniques
• Built by 200+ volunteers from Google, MIT, Climate Corp, DOE, and more
• Joined forces with Rocky Mountain Institute in 2017

What We Do

• Obsessed with understanding grid emissions at a granular level and building tools to help others use that information to maximize impact and advance goals
• Effectively utilize granular emissions data (5 minute intervals) over 100 U.S. grid regions
MIDAS

Market Informed

Demand Automation

Service
MIDAS
MARKET INFORMED
Grid Emissions Vary By Time

The marginal power plant that reacts when you flip a switch is always changing. Power customers don’t know in real time how dirty their power is.

A dirty time on the grid. Using electricity at this time causes more carbon emissions.

A clean time on the grid. Using electricity at this time causes fewer carbon emissions.
Price of electricity (In dollars per megawatt-hour, Northern California, 2017)
Combining AER & Demand Response

NP15 LMP

Automated emissions reduction opportunity

Demand response target
MIDAS
DEMAND AUTOMATION
Customers are increasingly demanding communicating, controllable, and “smart” devices and control systems

Smart devices, appliances, and controls are growing in availability and popularity

- The smart thermostat market is projected to quadruple in size, reaching a $4.4 billion dollar industry by 2025.
- Large consumer technology companies are now competing for market share in the growing “smart home” space.
- In institutional, commercial, and industrial facilities, business priorities are driving customers to demand connected, intelligent control systems to manage loads.

Some 30 billion devices may be connected to the Internet of Things (IoT) by 2020[2]

Emissions Reductions through Timing

- Much electricity use is at least partially flexible in time
- E.g. devices with compressor cycles can sync cycles to cleaner moments

Example: fridge cycles
Automated Emissions Reduction Platform

Proprietary machine learning algorithms detect marginal plants every 5 minutes.

Software optimizes to pick best time to use energy to meet capacity, cost, comfort, carbon objectives.
DRET: Automated Emissions Reduction

Individual consumers are expecting more environmentally friendly options, and are willing to pay for them

Consumers in America want and expect more sustainable solutions
- A survey of 1,500 customers conducted by SmartEnergy IP found that 32% expect their utility to adopt automation technologies to save energy[^1]
- A 2016 Gallup poll revealed that 73% of Americans want to emphasize alternative energy instead of oil and gas production[^2]

Consumers are increasingly willing to pay for environmentally conscious brands[^3]

Customer preference for AER translated into actual change in buying behavior

Study (Delta Institute):
• 100 individuals in Chicago offered a free thermostat and asked to choose between two identical devices, one with WattTime’s AER feature and one without

Result:
• Yes. 2/3 of customers chose the thermostat with AER.
Demand Response Participation with AER

Study (WattTime):
• 300 randomly selected individuals across 30 U.S. states were asked if they would sign up for a hypothetical ADR program. Unbeknownst to these individuals, they were randomly assigned to different ADR program descriptions: a regular program, one that offered an unusually large financial incentive ($600/month per thermostat), or one with AER.

Result:
• Adding environmental impact to a DR program (by adding AER to it) increased signups. Contrary to researcher expectations, AER increased signups even more than financial gain did.
Existing Products

- JuiceNet™
  - Green EV Charging

- Emission-Minimizing EV Charging Feature (software upgrade)
  - Synchronizes with grid generation sources
  - Enables you to charge your EV when the cleanest energy is available on the grid
  - Reduces carbon emissions impact of EV charging

- $50.00 + FREE shipping

- Add to Cart
HOW EVOLVE WORKS

INPUTS

POWER PRICES

REAL-TIME DATA

WEATHER

CARBON

COMMUNITY

OUTPUTS

USER SETTINGS

COST

CARBON

COMFORT

EVOLVE AI

MACHINE LEARNING

ANALYTICS

MULTI-VARIABLE ALGORITHM

AUTOMATIC LOAD SHIFTING

IOT DEVICES

EVOLVE BATTERIES

MANUAL LOAD SHIFTING

NOTIFICATIONS

USER PROMPTS
MIDAS Proposal

Overlay emissions reductions and energy choice onto existing DR programs

Provide energy choice for customers

Achieve cost-effective continuous load shifting

Automated, device dependent program

Select market signals [emissions, energy, capacity, distribution, curtailment]
Thank You

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