

The Effects of End User Behavior on Microgrid Capacity Planning and Peak Demand Control

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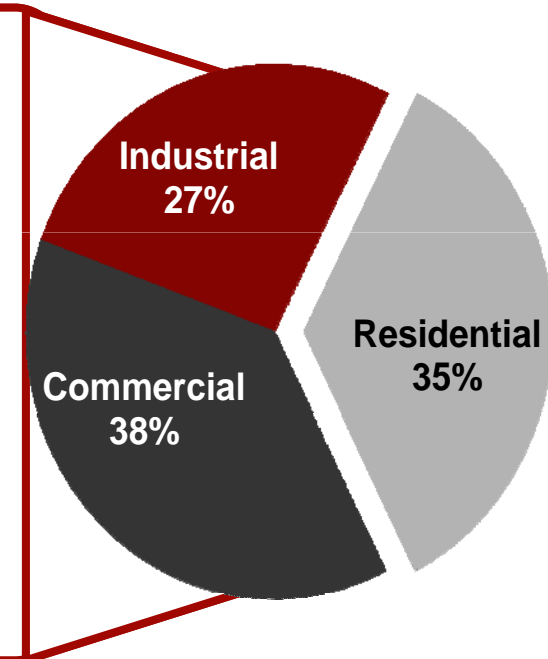
Director of Sales

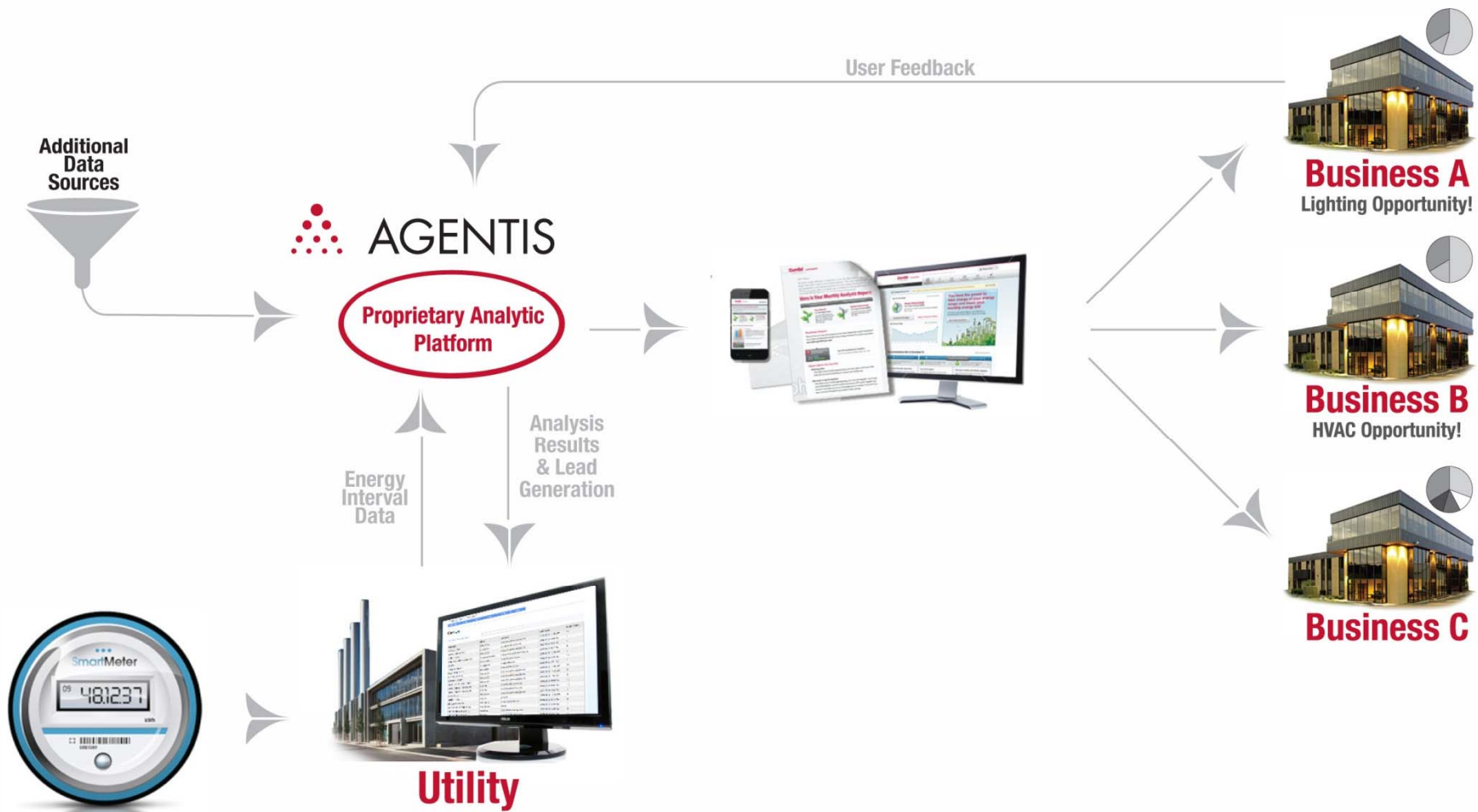


Agentis provides energy-efficiency applications for utilities and their business customers

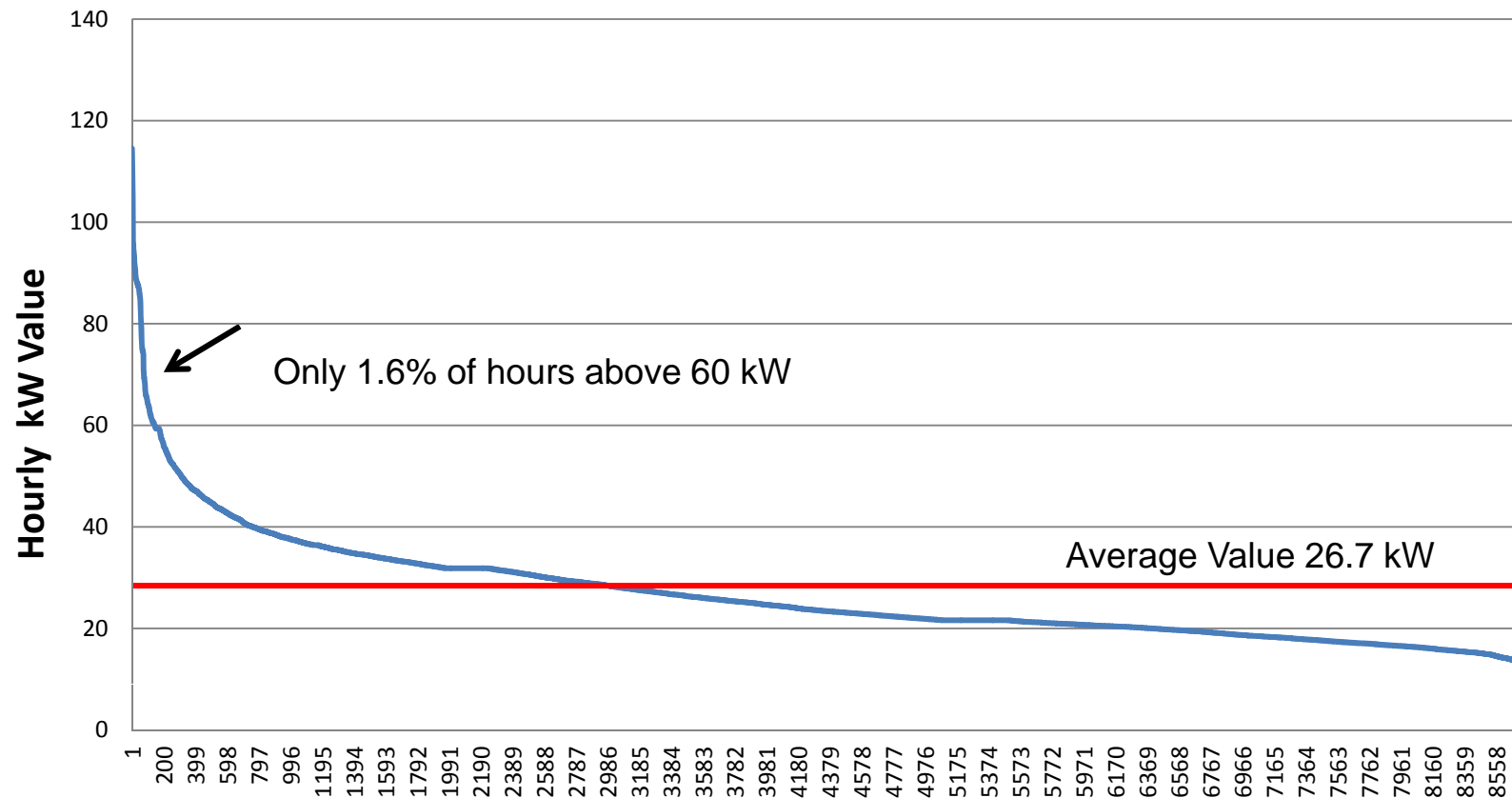
Agentis Approach

- Partner with electric utility companies
- Focus on the commercial and industrial market (C&I is responsible for **2/3 of all U.S. power consumption**)
- Develop low-cost disruptive technology to drive customer satisfaction and improve efficiency through:
 - Increased participation in utility EE programs
 - Behavior change





Annual Hourly Demand for Medium Sized Building in Chicago Area



Behavior Based Demand Response is Common Practice

- Utilities offer businesses incentives to reduce their energy usage during periods of high demand. For example a 100F weekday afternoon.
- These reductions are typically achieved by simple actions like adjusting thermostats, reducing lighting in unused areas.

Behavior Based Energy Efficiency programs are gaining acceptance

- Agentis analyzes energy data and tells businesses where they have savings opportunities.
- Analysis is important, but engagement and messaging are also key elements of a successful Behavior Based program.

Energy Used at Businesses When Shutdown

An analysis of ~6,000 businesses showed 33% of total energy usage occurred when the businesses were closed.

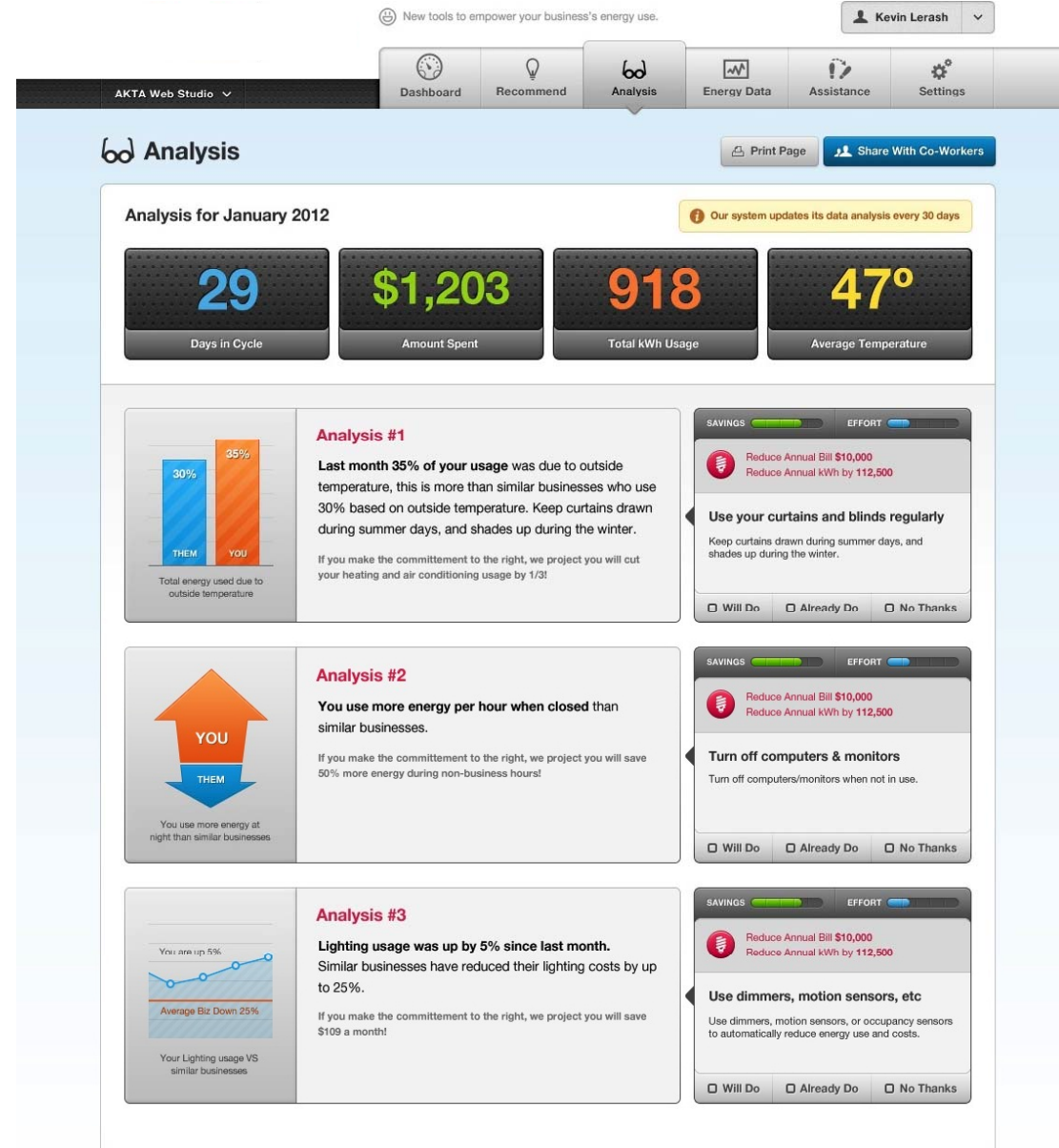
Some business types like **Office** and **Religious Worship** have a clear opportunity to use less energy when closed.

Proper business segmentation is important for both analysis and engagement.

Business Type	Avg. % of Energy Used When Closed
Outpatient Health Care	40%
Other	39%
Lodging	38%
Nursing	37%
Office	37%
Religious Worship	37%
Non-refrigerated Warehouse	36%
Unknown	33%
Food Sales	33%
Service	32%
Retail Other Than Mall	28%
Strip Shopping Mall	28%
Food Service	27%
Public Assembly	26%
Education	19%

Good Messaging

- Provides context
- Is understood by intended audience
- Provides call to action



Benefits of Microgrids when using Behavior Based Methodology

- Unlike large generation and distribution systems, Microgrid end users are less diverse
- Often Microgrid end users are part of one organization and can easily be motivated to understand and act on team goals.
- BUT – understanding and engaging end users needs to be a focus.