CASE STUDY

Ndustrial helps Lineage Logistics monetize energy management with industry's first smart demand response solution

New, game-changing solution enables ten-minute response – giving facilities enough time to safely shut down refrigeration systems during peak demand periods.

The result is like taking 650 households off the grid all at once.

Demand response (DR) programs pay businesses to reduce energy usage during periods of grid stress. These programs have existed in commercial buildings for many years, but industrial facilities have been slow to commit.

That is now changing, thanks to an automated system that makes life easier for facility managers and massively increases revenue potential. Now companies like **Lineage Logistics** can effectively turn entire facilities into giant batteries that provide flexibility to the grid.

A slow start to DR

Lineage Logistics, the world's largest cold storage company, signed up for a demand response program in Allentown, PA – but initially, they rarely participated in DR events.

That's in part because the burden was on facility managers to respond appropriately to events. Without good data or well-defined procedures, they were hesitant to make decisions that could potentially impact food safety or production.

There was a more fundamental problem, too: they weren't able to respond to events within the required window. In a 24/7 operation, there's not always a qualified person available to get to the control panel. Even if they do get there in time, the equipment couldn't be safely curtailed within the 10-minute window required of the most lucrative events, known as "fast" demand response.

An unprecedented solution

Ndustrial™, Lineage's long-time partner, seamlessly integrated their refrigeration control systems and augmented the connection with their DR aggregator. Aggregators connect Distributed Energy Resources (DERs) from various customers and sell them into energy markets.

When working with commercial customers, the aggregator provides hardware that tells equipment when to shut down. This works well for certain loads like HVAC, but industrial equipment is more complex. Safe curtailment requires proper sequencing and ramp-down periods. Plus, facility managers often want to control various combinations of loads under various circumstances, rather than shutting down fully.

Ndustrial augmented Lineage's efforts in three distinct ways:

1. Provided historical data to inform how much load reduction Lineage could comfortably commit;
2. Codified various curtailment scenarios and shutdown sequences; and
3. Automated the execution of those scenarios, such that facility managers can participate in DR events at the touch of a button.

Historical data from Nsight™, Ndustrial's Energy Intensity software, armed Lineage with their typical load profile and revenue data so they could better estimate the amount of load to make available for both "fast" and hour-long DR events.

With this understanding, Ndustrial then codified the decision tree so facility managers don't have to make these complex choices on the fly. Now they can trust that their decision to participate will be optimal given the input from the DR aggregator and the conditions of the facility at any time.

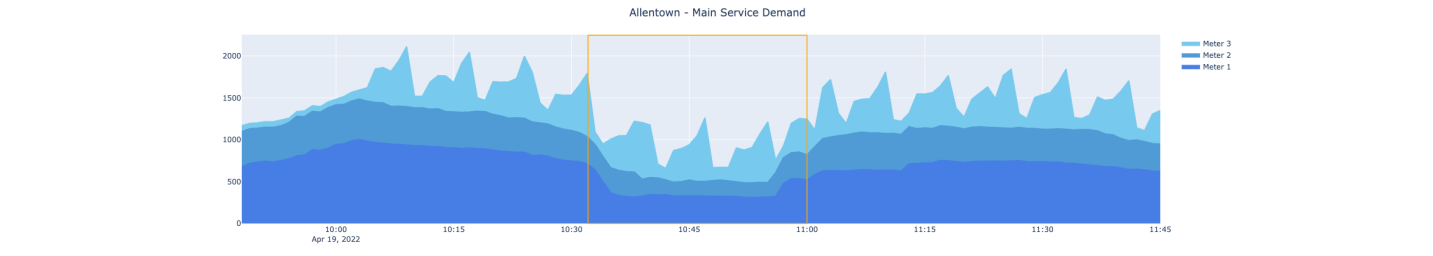
Finally, Ndustrial integrated its software with both the DR signals and with legacy refrigeration controls from **M&M Refrigeration** so that systems can be curtailed automatically. Now users can throttle the equipment with a simple text message approval.

A new era in Allentown

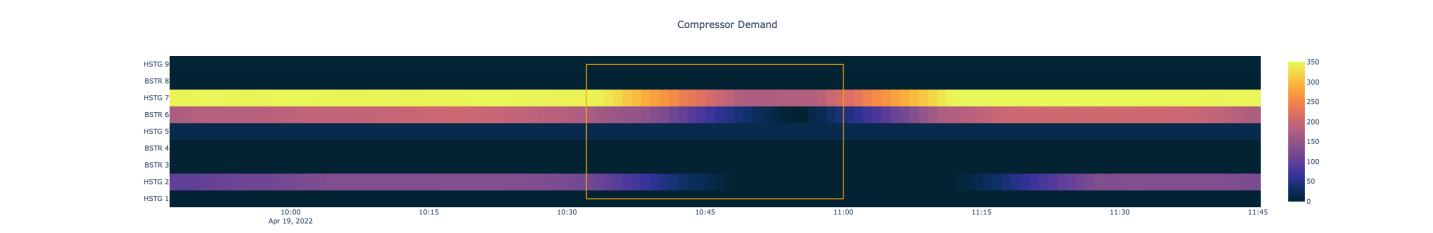
The result of this orchestration and automation layer is profound. Now facility managers can safely and easily curtail large industrial refrigeration systems in under 10 minutes. This allows the temperature-controlled warehouse itself – not just peripheral loads – to participate in fast DR events. That's the equivalent of taking 650 average households off the grid all at once.

> ***"The new solution truly automates our load control and ensures we can execute targeted curtailment planning that will maximize our revenue and minimize any risk to our facility production,"*** says Chris Thurston, Finance Director, Network Ops and Energy.

Snapshot of a fast DR event



The Allentown facility shed 778kW of load within 6 minutes of approval.



Compressors completed their ramp-down in time to participate in the event.

Now Lineage can not only insulate themselves against real-time electricity price spikes, but also monetize their energy management goals by helping keep the grid stable when it's needed most – all without compromising food safety or throughput.

Reclaiming the 'I' in C&I

The solution also provides the grid with a new class of resources. Ndustrial's orchestration and automation layer gives the DR aggregator a single point of interconnection with a complex system – which makes it much easier for them to tap into the industrial sector.

As Charles Tuck, VP of Energy & IoT Solutions at Ndustrial puts it: "DR aggregators claim to serve the C&I market, but so far they've mainly focused on the commercial side. Now they can reclaim the I in C&I."

By integrating with industrial systems, demand response aggregators gain access to load flexibility several times the magnitude of peripheral loads, which means more money for all involved – and ultimately, lower prices for other energy users, too.