



BOSS

BOSS Controls

Smart Buildings Made Easy, Secure, and Resilient

Opportunity and Market

Increasingly, regulators and customers are **DEMANDING** efficiency, greater control, and resiliency.

80% OF BUILDINGS in the United States are over 20 years old, with an average age of 50 years, limiting the ability to carry out deep energy retrofits.

Low impact, non-invasive, efficiency solutions will be **CRITICAL** for meeting the demands of the market in these buildings that will be around for at least 30 more years.

Technology Overview



We offer a comprehensive technology solution, using our Atmospheres® platform and smart controls for data collection, aggregation, and predictive automation, empowering building managers



**IMMEDIATE
ENERGY
CONTROL &
REDUCTION**



**THROUGH LOW
COST NON-INVASIVE
IMPLEMENTATION FOR
BUILDING OWNERS**



**CREATING MULTIPLE
OPPORTUNITIES FOR
ENERGY
OPTIMIZATION AND
CONTINUITY**

Technology Overview



BOSS uses a cloud-based software management and analytics platform (Atmospheres®) with embedded cyber secure chip technology enabling Energy Software as a Service (ESaaS):

- Behind the meter control for electrical junction points
- Building load optimization and grid balance
- The collection and analysis for device and building electrical data
- Power usage analysis



Technology Overview



BOSS behind-the-meter controls are secure & resilient devices, communicating over WiFi, to Atmospheres® for automated:

Load Shedding/ Shifting

- Power off unused devices
- Shed or shift during peak load times
- Addresses previously untapped efficiency
- Control all electrical junction points, starting with plug-load

Recurring Financial Benefit

- Little up-front customer cost
- Reduced energy consumption
- Demand Response participation
- Operational leverage
- No financial risk to customer

Advanced Demand Management

- Integrated DERs for continuity/resiliency
- Connection from device to wholesale market
- Price, demand, and building operation correlation
- Predictive operational management & maintenance

Technology Overview

Atmospheres® Platform

BOSS cloud-based operating system

- Intelligent energy management and control platform and dashboard
- Connects all devices through the internet to a smart grid with a cradle to grave cyber security solution
- Provides Big Data analytics and value-added services for energy and operational savings
- Maximizes value for all buildings, facilities, industrial activities and suppliers

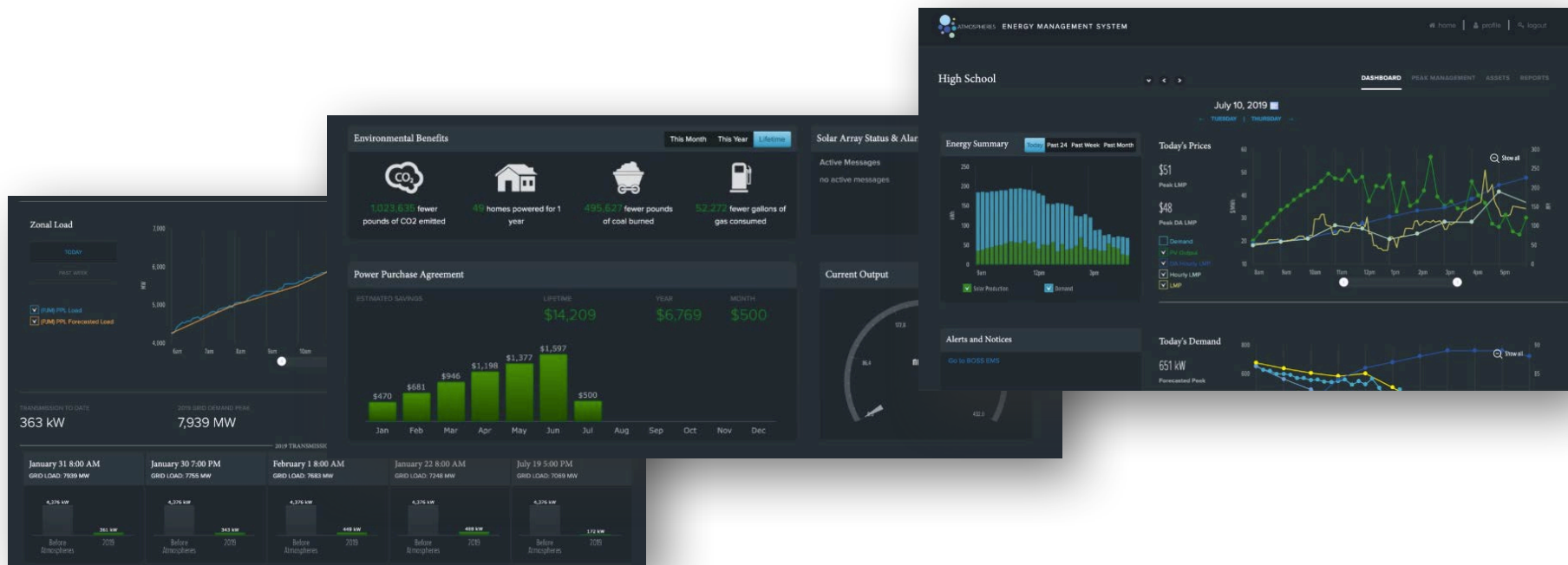
* Capable of running private cloud or on-premise



BOSS Atmospheres® Building to Grid Automation



Our customers benefit from deeper understanding of their building energy usage, automated efficiency triggers, and real time energy market data



There are no competitors offering a comprehensive, financed, cybersecure, turnkey building efficiency solution.

HARDWARE MANUFACTURERS

- High upfront cost
- Invasive installation
- Pushes proprietary systems, lacks flexibility



SMART BUILDING SOFTWARE

- Expensive, long ROI, and limited financing
- No control of plug load devices



BOSS' comprehensive solution levels the playing field for customers and utilities and provides an advanced future roadmap strategy, including differentiators:

Behind the meter
control from
electrical junction
point to grid

Built-in
measurement &
verification
(M&V)

Broad market reach
through strategic
utility and telecom
partnerships

Transform utilities'
business model

Advanced data
analytics and
predictive
capabilities

No-cost approach,
with financing and
short ROI

Cybersecure and
resilient chip-set and
IT architecture

US made
components, built-
for-purpose, & no
back-door access

Virtual Power
Exchange Strategy /
Prototype

Innovation – Virtual Power Exchange



BOSS Controls, partnering with FinTech leader Securrency is creating a new energy leverage platform (2021) :

- **PROBLEM:** There is a market inefficiency for buying and selling energy transactions from distributed resources
- **SOLUTION:** A blockchain distributed ledger for secure, compliant, localized energy procurement – the BOSS Virtual Power Exchange (VPE)

VIRTUAL POWER EXCHANGE

A blockchain energy distribution market platform to:

- Inform market of power product
- Sell / purchase local power products
- Financial transactions executed with security and compliance

END CUSTOMER ROLE IN VPE

- Broader power supply capabilities
- Building-to-building or business-to-business leverage
- New resiliency and continuity capabilities

UTILITY GRID ROLE IN VPE

- Wires & connectivity for transmission of power products.
- Electrons go through the grid,
- The transaction is brokered through the VPE

	BOSS ESaaS Solution	Traditional ESPC/UESC (ESCOs - ESG, Constellation, Greenleaf...)	Consumer Smart Home/IoT (Google, Amazon...)	Device Manufacturers (Honeywell, Siemens, Johnson...)	Smart Building Software (BuildingIQ, ICONICS, Flywheel Bl...)	Telecommunications (Verizon, AT&T, Sprint...)	DER Vendor (Solar, Battery, Wind)
Project Funding	✔	✔	✗ High cost/ abandonware risk	☹ Very limited – high cost of ownership	✗	✗	☹ Limited by project & market
Savings Driven	✔	✔	☹ Small foot-print & spotty device reliability	☹ Not main focus	✔	✗	✔
Total Demand Energy Management Services	✔ Smart building – hdw, software, services	☹ Limited – hardware projects only	✗	✗ Hardware focus – no market/no DER	✗ Software only – no device control	✗	✗
IT & OT Cyber Secure & Privacy Protection	✔	☹ Vendor specific – info. security only	✗ Open architecture, inherently insecure	✗ Many security vulnerabilities & alerts	✗ Many security vulnerabilities & alerts	✗	☹ Some security – weak when Internet connected
Telecom & Energy Service Agnostic	✔	✗ NA – not included	☹ Many force Zigby/ some telecom specific	☹ Limited – mostly proprietary – no stds.	✔ Generally, unless offered by Telecom	✗	✔
Behind the Meter Controls	✔	☹ Limited	☹ Reliability issues – no stds.	✔	✗	✗ Some motion toward – very limited	☹ Only pertaining to their specific resource
Curtailment Services	✔ PLC, Capacity, & Trans.	✗ NA – not included	✗	✗	✔ Not all – many have some curtailment focus	✗	✗ Not provided w/o addl. software
Demand Response	✔ Capability at device- level	☹ Legacy based – limited functions	✗	✗	✔ Not all – many have manual DR	✗	✗ Not provided w/o addl software
Wholesale Market Resale	✔ From device to market – profit driven	✗ NA – not included	✗	✗	✗ Very limited – very few with this capability	✗	☹ Limited – resource based
Operational Savings	✔ Central ops., reduced run-time & FTE	☹ Legacy based – limited functions	☹ Limited – unreliable for commercial use	✔ Focused on large loads HVAC	✗ No device control	✗ Some – limited due to proprietary nature	✗
Centralized Device Control	✔ Single platform for legacy & new	☹ Legacy based – limited functions	☹ Limited – unreliable for commercial use	✔	✗	✗ Directional – need 5G	☹ Limited – resource based
Predictive Maintenance	✔ Power profile & anomaly alerting	☹ Legacy based – limited functions	✗	☹ Generally limited to proprietary HVAC	☹ Some capabilities – limited action	✗ Limited to specific devices/platforms	☹ Limited to their specific resource
Smart Building Data Analytic Services	✔ Data services; increased asset value	✗ NA – not included	✗	☹ Limited	✔ Limited - no device control	✗ Directional – need 5G	☹ Limited to their specific resource
Transactive Energy Services	✔ Complete architecture	✗ NA – not included	✗	✗	✗	✗	✗
Interoperability with other resources	✔	✗ Hardware focus, some proprietary software	✗ Proprietary hardware, software, and protocols	✗	☹ 50/50 – APIs/ proprietary code	✗ Limited to OS interfaces	✔ Some proprietary, but mostly open API
Micro Grid Enablement	✔ Full Integration	☹ Limited	✗	✗	✗	✗	✔

Maturity

BOSS

PROVEN TECHNOLOGY

43 US States, 4 Canadian Provinces, and 7 Countries

MARQUEE CUSTOMERS



UTILITIES



EVERSOURCE

CHANNEL PARTNERS



Maturity



Current State

- Significant customer and market research
- Market seeding & marquee customers
- Easily scales from 1,500 ft² to 500,000+ ft²
- Average 100 bld. campus can generate \$8M - \$10M leverage, over 10 yr. contract
- Strategic partners
- Utility pilots: DLC, Eversource, PG&E

Risk Management

Top Risks	Mitigation
Technology Failure	BOSS technology is mature with rigorous design, engineering, manufacturing, and quality management
Security or Resiliency Failure	BOSS offers best-in-class cyber secure chip-to-cloud technology with an aggressive strategy for threat and emerging risk management. <i>*BOSS internal risk mgmt. is rooted in RMF & NIST stds.</i>
Market Readiness	BOSS has closely monitored the market. Deregulation, Energy Transition, and threat protection requirements are aligned for market adoption

Expansion

- Broad market reach through utilities and partners
- Pricing signal integration enhancements
- License BOSS secure chip for additional control devices
- Atmospheres® 3.0
- AI auto-detect and correct
- Virtual Power Exchange capabilities

Operations & Maintenance

BOSS

No Special Skills to Install

- Preconfigured
- Plug and play
- Immediate operability

No Manual Intervention

- Predetermined automation
- Admin console for oversight
- Ad hoc reporting & actions

No Operational Impact

- Non-invasive install
- Aligned with customer goals
- Seamless to occupants

DAY 15

Assess Customer building and energy usage

Establish Customer energy goals and strategy

DAY 30

Install hardware and configure the Atmospheres™ software

DAY 60

Establish an energy baseline, produce control recommendations, and begin automated actions

DAY 60+

Provide on-going support, analysis and reporting, as well as, recommendations for additional opportunities

Performance



BOSS has demonstrated strong performance results and continues to refine data models and load shedding / shifting capabilities

VERIFIED COMPLIANCE

- UL tested by Intertek
- Certified ITAR manufacturer
- RF components verified by FCC
- WiFi IEEE 802.11 b/g/n compatible
- WPA/WPA2-PSK, WPA2-Enterprise (PEAPO, EAP-FAST)
- Open ADR capable
- Manual over-ride and ad-hoc capabilities

MARKET HISTORY

- Customer validated through case study and current roll-out population (5 yr history)
- Pilot with PG&E / ADM validated
- Current pilot with DLC / Navigant
- Broad market adoption planned through utilities
- BOSS' solution sheds load through inherent capabilities
- Load shifting requires low-effort DER integration to BOSS solution

Ideal Pilot Scenario



PRIORITIZATION

- BOSS has a database & selection tool to rate bldg. value proposition
- Information regarding device types would be helpful
- BOSS Customer Engagement Packet will facilitate assessment and ID

BUILDING

- Small to Mid-Size Owner Operated
- Older buildings with limited automation
- Difficult to cost-justify retrofit
- PTACs and/or Window ACs with high plug-load draw

OPERATIONS

- Generally not 24X7
- Equipment that heats/cool: vending; water coolers; coffee; printers; personal heaters; monitors; icemakers.
- Generally not life-safety or mission-critical

OTHER DRIVERS

- BOSS partnerships will greatly increase value proposition
- Developing add-on capabilities to facilitate b2b and building-to-grid

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