GreenBus® 2.0

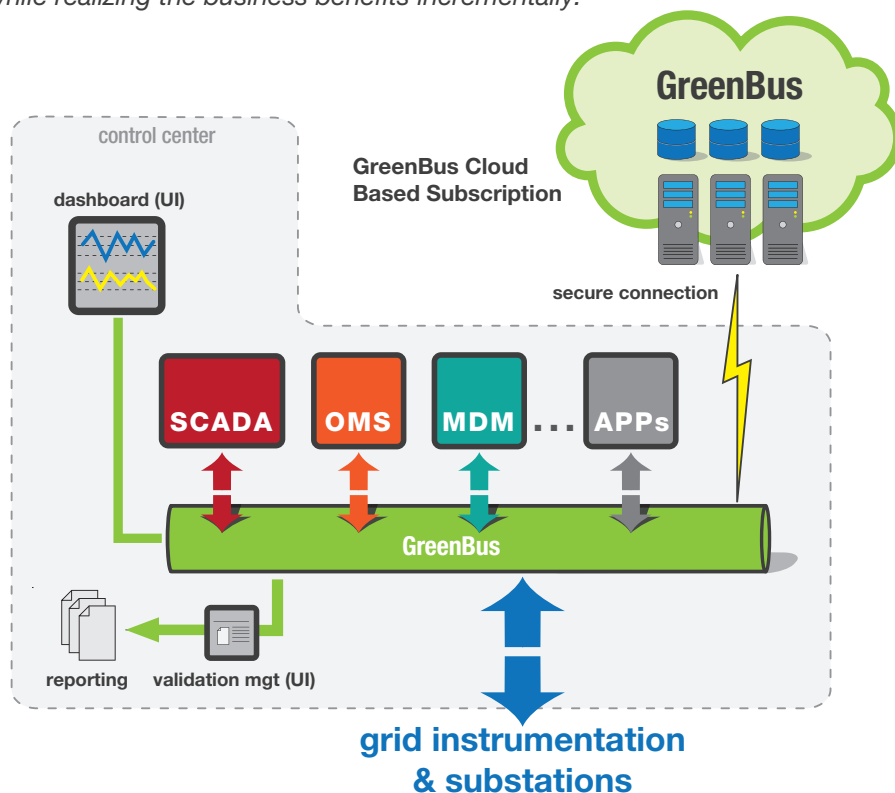## SUBSCRIPTION-BASED ENERGY CONTROL CENTER FOR UTILITIES

Green Energy Corp's GreenBus software platform enables Utilities to adopt the Smart Grid and integrate legacy technology. Utilities can now design and implement an architecture that supports technology adoption over time, while realizing the business benefits incrementally.

GreenBus

Key Benefits

- Applications share data, wide area network (WAN) and field instrumentation
- Eliminates point-to-point interfaces & custom patches
- Capture extremely high volume real-time operational data
- Financial flexibility through cloud or on-site subscription-based service
- Better visibility, metrics and control of grid operations
- Easier integration of renewable energy sources
- Increases data accuracy and precision
- Automates work-flow and reduces error-prone manual processes
- Streamlines regulatory compliance and reporting

Precision & Flexibility

The GreenBus enables packaged applications such as SCADA, AMI/MDM, OMS, CIS, IVR and AVL to share data over a standard API and industry standard interfaces like MultiSpeak®. Each application can access data from other applications using the single GreenBus API instead of developing and configuring multiple custom connectors.

Cost Savings – Utilities can reduce expense and time required for integration. Applications will no longer require a redundant WAN connection or redundant grid instrumentation thereby reducing costs and increasing reliability.

Pay-As-You-Grow, No Capital Expense – GreenBus is delivered by a cloud-based subscription service, and allows Utilities to add functionality by enabling applications on an as-needed basis.

The GreenBus combines business decision-making with real-time data.

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FEATURE	DESCRIPTION	BENEFITS
Subscription Based	Energy Control Center (ECC) delivered by cloud-based subscription service. GreenBus runs on redundant servers with secure network connections.	GreenBus offers financial and functional flexibility for a utility through a Software Purchase Agreement (SPA): • 7 year term • Standard subscription: 　› GreenBus *Core* 　› GreenBus *Functional Services* 　› GreenBus *Applications* 　› Substation *Automation Provisioning*
Security	• Confidentiality • Authentication • Integrity • Non-Repudiation • Access Control • Java VM (API) Interoperation: • LDAP • Kerberos • Active Directory • RSA	**References:** NERC Security Guidelines & NISTIR 7628 Green Energy Corp continues to closely track the NERC, FERC, NIST and other security guidelines and mandates.
Data Model / API	• MultiSpeak© 3.0 • MultiSpeak© 4.0 • IEC CIM 61968	By using a dynamic and flexible data model, the GreenBus allows a utility to use current and future (yet-to-be-defined) standards.
Database	Real-time, highly scalable, fault tolerant, decentralized database with 'elasticity' and 'tunable consistency'. Flexible operations with *any* database.	Used by FaceBook, Cisco WebEx, Twitter and others, the 'Cassandra' database allows utilities to capture real time grid data at high sampling rates.
Messaging	Red Hat Enterprise MRG (messaging, real-time, and grid) for high throughput and high performance computing.	Used throughout the financial industry, where real-time, secure transactions are required, MRG supports a wide variety of tasks, ranging from sub-second calculations to long-running, highly parallel jobs.
Adaptors	**Electrical Power Standards** • DNP3　• IEC 61850 • ModBus　• OpenADR **Optional Adaptors** (100s available) • ABB　• SEL • Cooper　• Schlumberger • GE　• Siemens • Harris　• TRW • Landis & Gyr　• Many more	Industry standards DNP3, ModBus, IEC 61850 (substation automation) and OpenADR make the operation and integration of real-time devices as painless as possible. GreenBus comes with 100s of ready-to-use adaptors to communicate to utility substations, RTUs and grid devices.
Applications	• Data Viewer & Control (HMI/GUI) • *Electric Vehicle (EV) Application* • *Event Notification Application* • *Trend Server Application* • *Calculation Application* • *Field Communication Management* • *Modeling Application* • *Historian Application*	Utilities will appreciate that the GreenBus comes with ready-to use functionality. Leading application vendors can participate in the GreenBus certification program to assure users of full architecture compatibility with the GreenBus engineering standards.

GreenBus Support

The Green Energy Corp GreenBus subscription is designed to support near real-time utility management systems throughout their development and production lifecycles. Green Energy Corp provides support and services to a range of clients – from partners working in the development environments to live production systems. The subscription model is designed to provide the most value in new technology, formalized quality and assurance programs, security updates, support for industry standards, configuration management and continuous operational support.

For more information please visit **greenenergycorp.com** or call 303-453-8381 to speak to a Green Energy Corp representative.

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