

## Frequently Asked Questions

### 1. What is Demand Response?

FERC defines Demand Response (DR) as *“changes in electric usage by demand-side resources from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.”*

### 2. What is Automated DR?

Automated Demand Response (Auto-DR) consists of fully automated signaling from a utility, Independent System Operator (ISO), Regional Transmission Operator (RTO) or other appropriate entity to provide automated connectivity to customer end-use control systems, devices and strategies. Auto-DR does not require full automation on the customer end.

### 3. What is OpenADR™?

Open Automated Demand Response (OpenADR) is an open and interoperable information exchange model and emerging Smart Grid standard. OpenADR standardizes the message format used for Auto-DR so that dynamic price and reliability signals can be delivered in a uniform and interoperable fashion among utilities, ISOs, and energy management and control systems. While previously deployed Auto-DR systems are automated, they are not standardized or interoperable.

### 4. What is the OpenADR Alliance?

The OpenADR Alliance is a mutual benefit corporation created to foster the development, adoption, and compliance of the OpenADR Smart Grid standard. OpenADR-based solutions will standardize, automate and simplify the use of Demand Response (DR) worldwide – making DR a more reliable and cost-effective resource to help utilities meet growing demand for energy, and giving customers greater control over their energy future. While the benefits of widespread DR adoption are clear, the industry to date has lacked an organization responsible for the education, training, testing, and certification needed to bring this technology to market.

The OpenADR Alliance currently has over 75 members including utilities, software suppliers, device manufacturers, national labs, DR aggregators, testing and certification labs, system integrators and consulting firms. Members get support from the Alliance’s technical and marketing committees to enable shorter development cycles. Members get early access to specifications and have the opportunity to influence the evolution of the OpenADR standard. Members also have the opportunity to certify their products as OpenADR-compliant.

## 5. Are there any OpenADR deployments?

Over 60 utilities and controls vendors have already announced or deployed OpenADR-based systems across the U.S. and internationally.

## 6. What are the benefits of OpenADR?

OpenADR adoption will benefit a wide range of stakeholders.

### **Utilities & Energy Service Providers will benefit from:**

- ***Increased grid reliability***
  - OpenADR-based DR capacity is a more predictable DR resource for utilities to use during times of grid stress.
- ***Deferred capital investment***
  - DR helps defer the need for new generation, and OpenADR-based DR systems give utilities greater confidence that DR resource will respond when called.
- ***Attainment of DR goals***
  - Many states have implemented peak load reduction goals. OpenADR-based solutions typically produce a larger and more consistent kW reduction than other approaches, which helps utilities achieve peak reduction targets.

### **Commercial, Industrial & Residential Customers will benefit from:**

- ***The ability to mitigate the impact of Critical Peak Pricing (CPP) events***
  - CPP tariffs can increase kWh costs dramatically during events. OpenADR-based systems help customers automatically reduce usage during events to minimize dynamic pricing impact.
- ***The ability to monetize discretionary loads***
  - Many customers today participate in DR programs. OpenADR-based systems will help customers and third party aggregators capture additional DR capacity from discretionary loads with minimal impact on operations or occupant comfort.
- ***The ability to maximize utility incentives***
  - Most utilities provide incentives to install DR systems, and many provide enhanced incentives for fully-automated systems. OpenADR helps customers install new systems that typically offer ongoing DR, EE and peak demand reduction benefits.

### **Equipment Manufacturers & System Integrators will benefit from:**

- ***Differentiated products***
  - OpenADR-based systems will compete effectively against proprietary systems in the market due to the higher incentives paid by utilities.
- ***Reduced system complexity***
  - OpenADR-based systems will offer quicker, easier installation & operation, and will help enable direct market integration in competitive electricity markets.
- ***Enhanced customer value***

- OpenADR-based systems help customers control costs and maximize the value of their discretionary electric capacity.

#### **7. How do the OpenADR Alliance's activities differ from the work within OASIS?**

OASIS (Organization for the Advancement of Structured Information Standards) is a not-for-profit consortium that drives the development, convergence and adoption of open standards for the global information society. OASIS published a standard called Energy Interoperation 1.0, of which OpenADR is a profile. The OpenADR Alliance is utilizing existing standards from OASIS including Energy Interoperation, Energy Information Exchange (EMIX) and WS-Calendar to create a fully defined, implementable, and testable standards..

#### **8. How do the OpenADR Alliance's activities differ from the work within NAESB?**

The North American Energy Standards Board (NAESB) serves as an industry forum for the development and promotion of standards which will lead to a seamless marketplace for wholesale and retail natural gas and electricity, as recognized by its customers, business community, participants, and regulatory entities. NAESB has been working with ISO/RTO council (IRC) to develop data models that feed into the OpenADR standard that is being developed by OASIS

#### **9. How do the OpenADR Alliance's activities differ from the work within UCAIug?**

UCAIug (Utilities Communications Architecture International Users Group) is a not-for-profit corporation focused on enabling utility integration through the deployment of open standards by providing a forum in which the various stakeholders in the utility industry can work cooperatively together as members of a common organization. The OpenADR TF within the OpenSG (Open Smart Grid) Technical Committee has been focusing on working with OASIS and NAESB to develop business requirements, Service Requirement Specification and Service Definitions for the OpenADR standard.

#### **10. How does the OpenADR Alliance differ from other industry alliances?**

The OpenADR Alliance is the only organization focused on developing, certifying and promoting standards-based DR solutions. The OpenADR Alliance works with other industry alliances as appropriate to promote these goals.

#### **11. Energy Interoperation (EI) is a new standard from OASIS. Where does OpenADR fit into this specification?**

OpenADR is a subset of the Energy Interoperation standard in the form of a profile. However, the goal to EI is more than DR, it includes transactive markets, and pricing beyond what the current market design requires. Hence, market-based implementations of EI do exist; however, there will be only one implementation for DR using the OpenADR 2.0 standard.

### 12. Who developed OpenADR?

The original OpenADR version 1.0 specifications were published by Lawrence Berkeley National Laboratory (Berkeley Lab) and funded by the California Energy Commission's Public Interest Energy Research (PIER) program after 7 years of research in Auto-DR. OpenADR is being further developed through the NIST Smart Grid-standards effort, along with organizations including: Organization for the Advancement of Structured Information Standards (OASIS), the Utilities Communications Architecture International User's Group (UCAIug), and the North American Energy Standards Board (NAESB). The current OpenADR Version 2.0 specification is being developed by the OpenADR.

### 13. Is OpenADR an international standard?

OpenADR version 1.0 has been implemented internationally in Europe and Asia. The OpenADR Alliance is submitting the OpenADR 2.0 specification to IEC to be accepted as an international standard.

### 14. Where can I get a copy of the OpenADR 2.0 specification

The OpenADR Alliance released the 2.0a profile specification and schema in August 2012, and the 2.0b profile specification and schema is expected to be released in October 2012. OpenADR Alliance members can download the specifications and drafts via the Alliance web site at [www.openadr.org](http://www.openadr.org).

### 15. What distinguishes OpenADR 1.0 from OpenADR 2.0?

OpenADR 1.0 created a technical framework and validated the concept of automated communication of price and reliability signals from utilities to customers. OpenADR 2.0 is building on this framework to create a standardized testing and certification process to support growing global interest and advanced features. Some key differences include:

<b>OpenADR 1.0</b>	<b>OpenADR 2.0</b>
<ul style="list-style-type: none"><li>• Limited number of vendors</li><li>• No certification program</li><li>• Geared towards local DR programs</li><li>• Not a national or international standard</li><li>• Lacks test tool and harness for implementors</li></ul>	<ul style="list-style-type: none"><li>• Large, rapidly growing ecosystem of vendors</li><li>• Test tool, test plan &amp; certification</li><li>• Flexible to adjust to most DR programs</li><li>• Based on OASIS standard</li><li>• Expanded architecture to include pricing, telemetry and other services</li></ul>

### 16. What features do the OpenADR 2.0 Profiles a, b & c offer?

The OpenADR 2.0 profile specification is divided into three parts:

- **Profile A:** Is designed for resource-constrained, low-end embedded devices that can support basic DR services and markets. Profile A is well suited to support standard DR programs.
- **Profile B:** Is designed for high-end embedded devices that can support most DR services and markets. Profile B includes a flexible reporting (feedback) mechanism for past, current and future data reports.
- **Profile C:** Sophisticated controls and high-end computer systems like servers to support all services and markets.

### 17. What is a VTN?

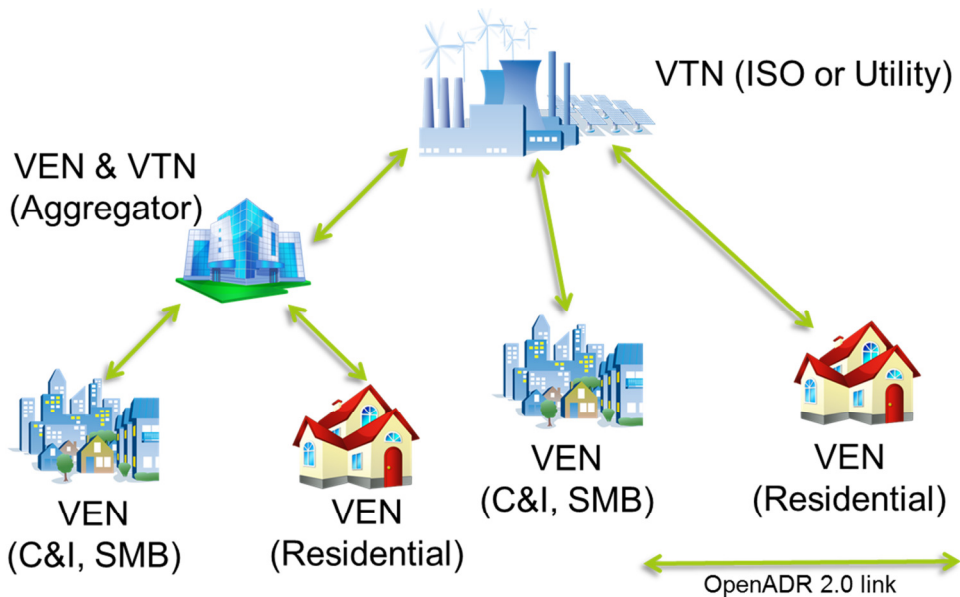
VTN stands for – Virtual Top Node. A VTN is typically a “server” that transmits OpenADR signals to end devices or other intermediate servers.

### 18. What is a VEN?

VEN stands for - Virtual End Node. A VEN is typically a “client” and can be an “Energy Management System” (EMS), a thermostat or other end device that accepts the OpenADR signal from a server (VTN).

### 19. Can a VTN be a VEN?

Yes. A VTN and VEN can be the same device. For example a DR aggregation server can act both as a VEN for a utility DR signal, and as a VTN for end devices.



**20. Can I certify a server that accepts an OpenADR 2.0 message and then forwards a proprietary message to client device?**

Yes. For example, the same device may be OpenADR certified as well as Wi-Fi® or ZigBee® certified.

**21. What is the difference between OpenADR 2.0 and SEP 2.0?**

OpenADR 2.0 standardizes information exchange between utilities and energy management control systems, whereas SEP 2.0 standardizes device communications in response to market signals once they have been received by a gateway. Both OpenADR 2.0 and SEP 2.0 follow the SGIP CIM guidelines. Industry efforts are underway to develop mapping tables between the two application layer protocols. Some key differences include:

<b>OpenADR 2.0</b>	<b>SEP 2.0</b>
<ul style="list-style-type: none"><li>• Service provider (server) to customer energy system interface (client)</li><li>• Enables automated AutoDR to commercial, industrial and residential customers</li><li>• Communicates over the Internet using web services</li><li>• Transmits larger data packets</li></ul>	<ul style="list-style-type: none"><li>• Enables residential and light commercial DR</li><li>• Communicates over Automated Metering Infrastructure (AMI) or via a broadband gateway</li><li>• Transmits small data packets</li><li>• Ideally suited for use within a home or building</li></ul>

**22. Can OpenADR be used in residential applications?**

OpenADR can be implemented in applications that serve all market segments. There are existing examples of implementations deployed in Commercial, Industrial and Residential markets.

**23. Can I mix and match OpenADR components, or do I need to stay with a single manufacturer?**

The OpenADR standard allows uniform and stable interoperability between devices. By creating standards-compliant devices and systems, customers will have choice between products and among vendors.

**24. How is cyber security supported by OpenADR?**

OpenADR 2.0 supports ECC and RSA server and client certificates with TLS and XML wrapping functionalities.

**25. How does a company get its products certified as OpenADR-compliant?**

Intertek ([www.intertek.com](http://www.intertek.com)) is the testing and certification laboratory for the OpenADR Alliance. Only Alliance members are allowed to have certified products.

**26. How can I tell if a product has been OpenADR certified?**

The OpenADR Alliance maintains a database of certified products on its website, and will manage the branding and logo process to ensure consistent and accurate use of the OpenADR Certified logo.

**27. When will the test tool be available?**

The first version of the OpenADR test tool supports OpenADR 2.0a, and was released August 1, 2012. The second version of the OpenADR test tool will be released in November 2012 and will support OpenADR 2.0b. More information can be found [here](#).

**28. When can we expect to see the first certified OpenADR 2.0 products?**

OpenADR 2.0a-certified products will be available beginning in Q3 2012.