**IEEE P802.24**

**Smart Grid TAG**

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| Project | IEEE P802.24 Smart Grid Technical Advisory Group |
| Title | Smart Grid Applications References from NIST  |
| Date Submitted | 16 Sept 2013 |
| Source | [Tim Godfrey][EPRI] | Voice: E-mail:  |
| Re: | TAG Meeting, Sept 16 – 19, 2013, Nanjing, China |
| Abstract | Excerpts and references to NIST documents regarding smart grid applications and use cases |
| Purpose | Contribution for 802.24 White Paper |
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### Introduction

The 802.24 TAG is developing a white paper on the applicability of IEEE 802 standards for the Smart Grid. A comprehensive list of smart grid use cases and applications is needed to provide a framework for the white paper. NIST documents have created these lists in their documents. This contribution provides a reference to the lists in NIST Documents.

### Document 1

**Draft NISTIR 7761 V2**, available as “[24-13-0028-00-0000-draft-release-2-of-nistir-7761-2013-07-12-sgip-pap02wg-00009-pap2-v2.doc](https://mentor.ieee.org/802.24/dcn/13/24-13-0028-00-0000-draft-release-2-of-nistir-7761-2013-07-12-sgip-pap02wg-00009-pap2-v2.doc)” (Draft Version, July 2013)

The list of use cases developed by the OpenSG Network Task Force is listed in a compact form in Table 2, on page 27:

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| **Smart grid use case[[1]](#footnote-1) – based on release V5.1.xls** |
| Customer Information / Messaging |
| Demand Response – Direct Load Control (DR-DLC) |
| Distributed Storage – Dispatch ; Island |
| Distribution Systems Demand Response (DSDR) - Centralized Control |
| Fault Clear Isolation Reconfigure (FCIR) – Distributed DAC – Substations; DMS; Regional Distributed DAC |
| Field Distribution Automation Maintenance / Support – Centralized Control |
| Meter Events |
| Meter Read |
| Outage Restoration Management |
| PHEV |
| Premise Network Administration |
| Pre-Pay Metering |
| Pricing: Time of Use (TOU) / Real Time Pricing (RTP) / Critical Peak Pricing (CPP) |
| Service Switch |
| System Updates (Firmware / Program Update) |
| Volt / VAR Management – Centralized Control |
| Smart grid use case – potential for releases post V5.1.xls |
| Configuration Management |
| Distributed Generation |
| Field Force Tools |
| Performance Management |
| Security Management |
| Transmission automation support |

### Document 2

“**NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0**” (NIST Special Publication 1108R2) February 2012 <[http://www.nist.gov/smartgrid/upload/NIST\_Framework\_Release\_2-0\_corr.pdf](http://www.nist.gov/smartgrid/upload/NIST_Framework_Release_2-0_corr.pdfhttp%3A/www.nist.gov/smartgrid/upload/NIST_Framework_Release_2-0_corr.pdf)>

Section 1.3.2 describes “Applications and Requirements: Eight Priority Areas” on pages 23-25

• Demand response and consumer energy efficiency

• Wide-area situational awareness:

• Energy storage

• Electric transportation

• Network communications

• Advanced metering infrastructure (AMI):

• Distribution grid management:

• Cybersecurity

In the NIST document, each bullet application starts a paragraph of definition and description.

The NIST Framework document also references a NIST-maintained [Interoperability Knowledgebase for Use Cases](http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/IKBUseCases)

At this site, the use cases are broadly grouped as follows:

* Transmission Operations
	+ Wide-area Measurement and Control (WAMAC)
	+ Central Generation Integration
	+ System Protection
	+ Substation Automation
	+ Ancillary Service Provisioning
	+ Large Scale Renewable Integration
* Distribution Operations
	+ Distribution grid.
	+ Fault Location Isolation and Restoration (FLIR)
	+ Integrated Voltage and Reactive Power Support:
	+ Energy storage:
	+ Distributed Energy Resources:
* Market Operations
* Customer Communications
	+ Demand response and consumer energy efficiency
	+ Advanced metering infrastructure (AMI):
	+ Electric transportation:
* Cross Cutting for Cyber Security, Network Management, ...
	+ Cybersecurity:
	+ Network and Systems Management

The NIST Use Case site also links to the [EPRI Use Case Repository](http://smartgrid.epri.com/Repository/Repository.aspx), which currently contains 213 smart grid use cases. Some additional use cases may be found there, and the descriptions are at a greater level of detail. However, this level of detail is not expected to be appropriate for the white paper.

1. For several of the payloads that might be classified as associated to Accounting (Auditing), Fault Management, those payloads are included across several of the other listed use cases. [↑](#footnote-ref-1)