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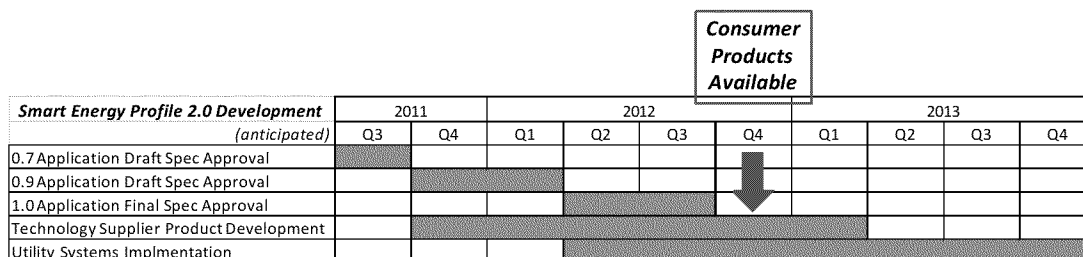
SMART ENERGY PROFILE 2.0 (SE2) DEVELOPMENT NOTIONAL TIMELINE FOR PLANNING PURPOSES

SUMMARY

To help facilitate an understanding of the Smart Energy Profile 2.0 (SE2) development process and to provide context for mass deployment of SE2 products and services, Cisco provides the following overview. In summary, Cisco believes it is very possible to have commercially-available SE2 consumer devices and services in 2012 and additional products available for mass deployment in 2013, including smart meter upgrades and utility back-office systems enhancements. These dates are notional and dependent on several milestones being achieved, as described below.

Smart Energy Profile 2.0 Development	2011		2012				2013			
(anticipated)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
0.7 Application Draft Spec Approval										
0.9 Application Draft Spec Approval										
1.0 Application Final Spec Approval										
Technology Supplier Product Development										
Utility Systems Implmentation										

Consumer Products Available

Figure 1: Anticipated SE2 Development Timeline

SE2 DESCRIPTION

SE2 is an application profile that is intended to be used to facilitate a common method of exchanging energy-related information across a variety of communications technologies. These technologies include Wi-Fi, power line carrier (e.g., Homeplug), wireless mesh (e.g., ZigBee), cellular, Ethernet, cable and others. This is possible, because SE2 is based on a proven suite of

Internet protocols (IP) and as such, can be used in a variety of applications to facilitate consumer empowerment. SE2 is important because without an IP-based protocol, the potential applications for consumers would be significantly limited. This means that SE2 would allow a developer of a smart phone application to enable a consumer to control a variety of manufacturers' products over cellular, Wi-Fi, ZigBee and Homeplug connections. SE2 has the potential to unlock significant innovation in consumer empowerment and engagement - much as IP did for the Internet. This is why the industry is nearly universal in its recognition that SE2 is the desired open standard for home area networking (HAN).

SE2 DEVELOPMENT PROCESS

The SE2 approval process proceeds through several defined stages. The current development started about two years ago and is currently at one of the major milestones -- the draft application specification (0.7 draft), which is under consideration. This stage ensures that a standard has proceeded far enough to enable companies to start building and testing technologies based on an approved draft specification, recognizing that technical issues may still need resolution and that testing will uncover additional issues to resolve. While the 0.7 draft did not pass a recent vote, Cisco believes that technical solutions to the minority concerns are available and has offered a technical solution framework to facilitate discussion among the broad stakeholder community. Cisco believes that the 0.7 draft application specification can and should be passed within the next three months with an effective governance and management structure.

The next stage after approval of the 0.7 draft is to ensure that devices are ready for certification testing, in what is referred to as the 0.9 draft application specification. In this

phase, the test plan would be written and devices individually tested. Cisco believes that this stage will take roughly six months, bringing the product testing phase into early-2012. Upon certification of a handful of products under the 0.9 application specification, a 1.0 or final version of SE2 application specification could then be approved by the second half of 2012. This means that any consumer products or utility devices using any form of telecommunication connection could be certified and deployed. From a vendor perspective, we believe that given this standards timeline Cisco and others could have SE2 utility and consumer products ready in the second half of 2012.

The proposed California HAN pilots will likely be occurring during this time period, providing an opportunity to leverage research gained by the pilots to be transferred into SE2 rollout strategies. Implementation of SE2-enabling utility back-end systems is needed to support mass deployment, and smart meters would need to have their firmware upgraded to SE2 – which could take up to 12 months after 1.0 specification approval and vendor product availability. This means utility and others' mass deployment of IP-based SE2 products and services could occur no later than 2013. To reemphasize a key point, these timetables are estimates based on an expectation that SE2 0.7 application specification could be approved by Fall 2011.

In addition to the specific application specification development, there is recognition that testing is at a critical stage and lessons learned from ZigBee Smart Energy Profile 1.0 (ZE1) development could be addressed in an improved process that also could ensure a more timely result. As such, a broad group of technology suppliers and utilities developed a testing approach in conjunction with the Electric Power Research Institute. This group is ready to begin upon 0.7 application specification approval. The plan involves creation of a test platform and tools to

demonstrate and evaluate SE2 Application Layer interoperability. The infrastructure will include an IPv6-based test harness to enable remote laboratory sites to join in the demonstration and testing exercises. The main objective of the effort is to demonstrate SE2 Application Layer interoperability: identify issues, provide industry access to the results, and provide public visibility to the progress being made in finalizing the SE2 as it advances from version 0.7 (test/interop ready, further refinements expected) to version 1.0 (final specification for formal certification). A second objective is to assist project members in developing full SE2 stack testing for relevant HAN technologies, such as ZigBee, Wi-Fi, or Homeplug.

At the same time, there are several activities underway to manage the transition for those few ZE1 devices that may not be upgradable to SE2. The Smart Grid Interoperability Panel (SGIP) has formed a Priority Action Plan (PAP) technical group, PAP 18 to address the need for a transition from ZE1 to SE2 systems through the use of gateways. In California, a Lawrence Berkeley National Lab – sponsored by the California Energy Commission's Public Interest Energy Research (PIER) Demand Response Research Center (DRRC) – has a project called the REDS Gateway project designed to develop a solution. Also, several technology suppliers are considering product enhancements to provide a ZE1-to-SE2 gateway function.

CONCLUSION

Cisco remains committed to supporting accelerated development of SE2, as demonstrated by the active participation of our top engineering experts. We believe that the recent multi-stakeholder discussions and increased awareness of the public interest in SE2 will help provide the proper context and motivation to complete development in a transparent, participative and timely manner.