

ご意見の内容及びご意見に対するご回答

意見提出元 : ENEL DISTRIBUZIONE SPA

No	該当箇所	ご意見の内容	ご回答
1	<p>Pag.. 7</p> <p>Smart meters measure and transmit 30-minute meter readings to MDMS (Head-End system).When a 30-minute meter reading is lost, MDMS checks that the communication with the meter is recovered. The meter retransmits the data in response to a recollection request from MDMS.</p>	<p><意見内容></p> <p>This requirement seems really important for TEPCO. Given the actual testing in Japan, Meters and More protocol meets the requirement.</p> <p>As an option ENEL proposal is that the concentrator performs some aggregation activities in order to avoid unnecessary traffic flow from field to MDMS system</p> <p><理由></p> <p>The possible issues:</p> <ol style="list-style-type: none"> 1. quantity of data to be collected (no requirement is specified by TEPCO) 2. quantity of data to be sent to the center by the concentrator (no requirement specified by TEPCO) which could strongly impact concentrator performances, WAN network solution and central system performances. <p><期待効果></p> <p>Better meter management strategy and lower resources in terms of computation power and communication lines for the traffic from peripheral to the center.</p>	<p>Thank you for your comments.</p> <p>We will consider your comments in selecting communication method.</p> <p>We basically aim to adopt an established standard. We will evaluate each system by RFP and demonstration examinations in terms of cost efficiency, technical advantage, expected future growth.</p> <p>We will further consider the PLC technology concerning the effects on our distribution facilities.</p> <p>いただいたご意見については今後の通信方式選定時に参考にさせていただきます。通信方式の選定においては、コスト、技術の優位性、今後の普及や長期利用の見込み等の見極めが重要となるため、確立された標準規格の採用を原則として、今後、RFP と技術実証により詳細に評価する予定です。</p>

			<p>なお、PLC 方式については、既存配電設備への影響の有無等を含め検討していきたいと考えております。</p>
2	<p>Pag 17</p> <p>A concentrator is installed for each transformer to ensure the communication quality considering transmission loss passing through transformer. (The number of customer is 10 to 20 per transformer).</p>	<p><意見内容></p> <p>The supplier should provide PLC concentrator installation conditions: whether a single concentrator for each transformer or an indication of a reasonable average meter number for each concentrator.</p> <p><理由></p> <p>PLC technology has been demonstrated capable to pass through MV/LV transformers. In fact, the recent tests performed by TNJ association in Japan have been very successful especially for Meters & More PLC (ENEL solution) technology which is already massively deployed in LV networks in Europe.</p> <p>By passing through transformers, the Japanese and US network scenarios can be compared to European one since the number of customer (meters) per concentrator can be extended to several hundred, so making PLC a performing and cost-effective solution even in Japan.</p> <p>(Attach of TNJ report).</p> <p><期待効果></p> <p>Improved ratio between number of meters and number of concentrator in order to reduce costs.</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on PLC concentrator installation conditions in selecting communication method or designing our systems from the standpoint of reducing the total cost.</p> <p>いただいた PLC 方式コンセントレーターの設置条件についてのご意見は、トータルコスト低減の観点から、通信方式の選定評価やシステム設計時の参考とさせていただきます。</p>

3	<p>Pag. 18</p> <p>PLC : Not suitable for wide range coverage due to its low aggregation efficiency to the concentrator</p>	<p><意見内容></p> <p>The ENEL proposal is to remove the comment. If a supplier is able to aggregate multiple substations under a single concentrator this comment is not anymore applicable. Furthermore this assumption should be valid if a supplier is able to simplify the data concentrator architecture (light) strongly reducing the production cost.</p> <p><理由></p> <p>See previous page.</p> <p><期待効果></p> <p>To have in place one single proven, reliable, efficient and timely available solution to solve the peak demand issue all over the utility area.</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on aggregation efficiency in selecting communication method from the standpoint of reducing the total cost.</p> <p>いただいたコンセントレーターの収容効率についてのご意見は、トータルコスト低減の観点から、今後の通信方式選定時に参考にさせていただきます。</p>
4	<p>Pag. 18</p> <p>RF mesh: Low power consumption due to low-power radio.</p>	<p><意見内容></p> <p>Above statement is true in general considering the single node in the network due to low TX allowed power, but an energy estimation should be done at the network/system level. Furthermore, even using a RF mesh architecture, having limiting the maximum TX signal power can have communication reliability issues in case of long node-to-node, node-to-concentrator distances and/or in case of infra-node metallic shields presence (i.e.: field experiences done in different countries).</p> <p><理由></p> <p>Energy consumption should be considered at system level. Typically, in a low power mesh network, a message before reaching the gateway (concentrator) needs to go through many nodes. Each of them spends energy to process and re-transmit data packets. The overall energy balance could be not so</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on power consumption in selecting communication method from the standpoint of reducing the total energy consumption in the whole system.</p> <p>いただいた消費電力についてのご意見は、システム全体のエネルギー消費低減の観点から、今後の通信方式選定時に参考にさせていただきます。</p>

		<p>advantageous respect to other network architectures. For example, PLC technology is able to control node power output depending on concentrator/meter channel condition (power control) so using low power in best channel conditions and high power in very harsh ones. Furthermore, a repeating message function can be automatically activated when direct communication concentrator-meter is not possible and in general to extend network communication distances. In our experience the number of repeaters used in a PLC communication is rarely above 3 hops and very often it's possible to guarantee communications without repetition.</p> <p><期待効果></p> <p>Worse consumption characteristic for RF meshed network than expected based on real experience done in the field.</p>	
5	<p>Pag. 18</p> <p>RF mesh has an advantage in running cost since it doesn't need communication fee for each meter.</p>	<p><意見内容></p> <p>The above sentence could be modified because it is also true for PLC technologies. On the other hand the RF mesh requires:</p> <ul style="list-style-type: none"> - higher maintenance and staff, - deep, detailed analysis of field and complex work in urban environment - Concentrators vs antennas mounting/settings 	<p>Thank you for your comments.</p> <p>We will consider your comments in selecting communication method.</p> <p>いただいたランニングコストについてのご意見は、トータルコスト低減の観点から、今後の通信方式選定時に参考にさせていただきます。</p>
6	<p>Pag. 18</p> <p>RF Mesh: Applied in common residential areas etc.</p>	<p><意見内容></p> <p>In principle emerging RF Mesh technologies, such as 802.15.4x, could be adopted in residential areas, but the related technologies and standards are not yet mature and sometimes still in development. So, ENEL recommendation is to start a Smart Metering deployment by using the PLC technology, due to its higher maturity and</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on RF mesh and PLC in selecting communication method from the</p>

		<p>field proven long term use in AMI systems.</p> <p>Emerging RF Mesh technologies should need extensive pilots before being considered as complementary to PLC infrastructure, to verify system performances, wireless security and immunity levels, protocol communication stability and interoperability issues.</p> <p>Moreover, due to demonstrated capacity of PLC to pass through transformers, PLC cost effectiveness is improved also in this Japanese scenario, making PLC technology very cost effective also in residential areas.</p> <p><理由></p> <p>AMI with communication based on PLC are fully deployed at worldwide level in all scenarios (urban, high-density urban, rural ones). For example, 40 millions of meters running PLC meters&more are already installed and successfully operating on field.</p> <p>In particular, “Meters&More” technology used by ENEL is already a consolidated open standard specification defined by European CENELEC regulations (to become soon adopted also by the International Electro-technical Commission IEC Organization) and it can be openly improved, if needed, to include optional features fitting specific requirements of Japanese market. For example, Meters&More field tests have been recently performed in Japan with single- or dual-channel carrier frequencies (115kHz, 132kHz) allowing higher transmission power (350mW) by ARIB regulations. As a result, close 100% communication success rate has been achieved in many different conditions including long distances over MV cables, MV-LV transformer passing and stable communication under very high noisy environments (e.g. with LED lighting)</p>	<p>standpoint of reducing total cost..</p> <p>いただいたマルチホップ方式とPLC方式についてのご意見はトータルコスト低減の観点から、今後の通信方式選定時に参考にさせていただきます。</p>
7	Pag. 25 Communication units	<p><意見内容></p> <p>Meters&More protocol is inherently resilient to congestion, its Master/Slave</p>	Thank you for your comments.

	<p>simultaneously transmitting 30-minute meter readings cause congestion; therefore, due to transmission to the MDMS in near real time, the requirement of the smart meter communication network, becomes difficult.</p>	<p>nature guarantee that a meter only communicate under Concentrator control, avoiding any possible congestion on the PLC channel.</p> <p><理由></p> <p>The Meters&More Master/Slave architecture, which is based on the fact that every meter only communicate under concentrator control, always guarantees two conditions:</p> <ul style="list-style-type: none"> - No congestion on the PLC medium - Every high-priority message can be immediately forwarded to the destination meter, the priority management is centralized at the Concentrator side and is therefore inherently effective and predictable, not relying on CSMA mechanisms, randomized back-off times and so on. <p><期待効果></p> <p>If high priority traffic should be delivered to meters, the Meters&More protocol can guarantee the prompt delivery even in conditions of high traffic level conditions.</p>	<p>We will consider your comments on the Meters&More protocol in selecting communication method from the standpoint of curbing the network congestion.</p> <p>いただいた Meters&More プロトコルについてのご意見は、ネットワークの輻輳抑制という観点から、今後の通信方式選定時に参考にさせていただきます。</p>
8	<p>Generic matter</p>	<p><意見内容></p> <p>In term of AMI we noticed that no requirement have been expressed in RFC related to the Head-End system. In our experience this approach could be extremely risky if the peripheral infrastructure (meters, concentrators ...) is not considered jointly to Head-End. ENEL strongly suggest to consider to include in the tender also the Head-End system in order to guarantee the best performances from the overall system and technically and economically have the opportunity to evaluate the real benefits of the complete infrastructure. The tender should have as object the supply of an AMI system (Advanced Metering Infrastructure) to keep guaranteed that all the goal should be achieved and the problem on going really solved.</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on the Head-End system in selecting communication method or designing our system from the standpoint of reducing the total cost in the whole system.</p> <p>いただいたヘッドエンドシステムについてのご意見は、システム全体のトータ</p>

		<p><理由></p> <p>In Enel 10 years experience one of the most critical parts of the complete system in term of dimensioning of resources (computation power, communication lines, man power ...) and overall design is the Head-End system: this system should in fact strictly cooperate with peripheral systems in order to guarantee performances and balance activities that need to be performed centrally with operation which can be partly performed by concentrators and meters.</p> <p><期待効果></p> <p>A good Head-End design driven by the experience of the suppliers with real technology implementation and taking into consideration peculiarities of AMI infrastructures. Good scalability and the necessary reliability of the system.</p>	<p>ルコスト低減の観点から、通信方式の選定評価やシステム設計時の参考とさせていただきます。</p>
9	Generic matter	<p><意見内容></p> <p>In slide #11 of basic specification for Smart Meter communication module we noticed important references to security. Today Meters&More communication protocol satisfy all such requirement nevertheless ENEL observed that in the meter_spec document there is no reference to security.</p> <p><理由></p> <p>In Enel opinion the meter should be “communication aware” and “security aware”: it should keep at least a register of all relevant threats observed: number of authentication fails, major important security related events such as FW upgrades and dates, FW digests and versions, meter parameters variation alarms, ...</p> <p><期待効果></p> <p>A major control over security threats and SW versioning</p>	<p>Thank you for your comments.</p> <p>We will consider your comments on security in selecting communication method or designing our system.</p> <p>いただいたセキュリティについてのご意見は、通信方式の選定評価やシステム設計時の参考とさせていただきます。</p>

<p>10</p>	<p>Pag. 10</p> <p>In regard to the interface specifications for smart meter and HEMS (Home Energy Management System), compliance with the standardization established by the Smart House Standardization Study Group will be achieved.</p>	<p><意見内容></p> <p>Is this protocol mandatory or a different approach can be suggested?</p>	<p>TEPCO's standpoint is to comply with the output of the study group, which defined the interface specifications for smart meter and HEMS. Thus, we say the protocol described is mandatory.</p> <p>(日本語訳)</p> <p>当社は、スマートメーターとHEMSとの間のインターフェース仕様を策定する検討会の結果に準拠する考えですので、ここで述べられているプロトコルは必須と考えます。</p>
<p>11</p>	<p>Pag. 12</p> <p>To manage the large-scale network efficiently and accurately, smart meter automatically transmits facility management information to MDMS.</p>	<p><意見内容></p> <p>This requirement seems to be focused on RF technology. Requires a further investigation in order to see if it's needed and how can be implemented in our system. Can TEPCO please detail further ?</p>	<p>The description is not dependent on communication media and it is applicable not only for RF technology but also for other technology solutions. "Facility management information" means meter ID, firmware version of communication and so on.</p> <p>For RF technology, we need information such as routing, received signal level, the number of transmitted frames, in addition.</p> <p>(日本語訳)</p> <p>ここでの記載は、通信方式とは関係なく、メーターのID、通信ファームウェア</p>

			<p>バージョン等を指します。なお、通信方式が RF メッシュの場合には、ネットワークを管理するために、通信経路情報、通信品質情報(受信電界強度、送受信フレーム数)等の情報を収集管理する必要があると考えています。</p>
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