	(a) state, if any, the financial impact of the change; (b) state the reasons for the change; (c) explain the effect of the change, if any, on the actual operating expenditure, actual maintenance expenditure, and actual capital expenditure incurred, in comparison to the forecast operating expenditure, forecast maintenance expenditure and forecast capital expenditure determined in the 2011–15 Distribution Determination during the Relevant Regulatory Year; and (d) explain the effect of the change, if any, on the actual operating and maintenance expenditure and actual capital expenditure incurred, in comparison to the previous Relevant Regulatory Year.	response to paragraph 1.1(e).
7. DEMAND MANAGEMENT INCENTIVE ALLOWANCE		
7.1	Identify each demand management project or program for which CitiPower seeks approval.	Two demand management programs have been identified for which we are seeking approval: • CitiPower residential storage trial • Storage investment framework design and analysis (SIFDA)
7.2	For each demand management project or program identified in the response to paragraph 7.1: (a) explain: (i) how it complies with the Demand Management Incentive Allowance criteria set out at section 3.1.3 of the *demand management incentive scheme*; (ii) its nature and scope; (iii) its aims and expectations; (iv) the process by which it was selected, including its business case and consideration of any alternatives; (v) how it was/is to be implemented; (vi) its implementation costs; and (vii) any identifiable benefits that have arisen from it, including any off peak or peak demand reductions.	**A. CitiPower residential storage trial** (a) i. Residential energy storage systems have the potential to be used for a variety of network and customer benefits. These benefits include aggregated dispatch of the battery units for peak demand management. The program is: 1. non-network in nature through investing in supply options for customers that reduces peak demand on the upstream network; 2. addresses peak demand management through trialling the use of battery aggregation software platforms to reduce peak network demand; 3. builds knowledge and capability to efficiently deploy residential storage to reduce peak demand on the network;

	(b) confirm that its associated costs are not: (i) recoverable under any other jurisdictional incentive scheme; (ii)recoverable under any other Commonwealth or State Government scheme; and (iii) included in the forecast capital or operating expenditure approved in the 2011–15 Distribution Determination or recoverable under any other incentive scheme in that determination; and (c) explain any assumptions and/or estimates used in the calculation of forgone revenue, demonstrating the reasonableness of those assumptions and/or estimates in calculating forgone revenue, including the reasons for CitiPower's decision to adjust or not to adjust for other factors and the basis for any such adjustments.	4. is non-tariff based; 5. there is no other scheme under which funding can be obtained or provision in the 2011-2015 distribution determination for this activity; 6. program has been treated as operating expenditure. ii. Residential energy storage will be one of the key technologies that impacts future customer demand profiles and the functional requirements of the network of the future. The project involves the deployment of 20 residential battery units with aggregation software in targeted areas within the network. iii. The project aims to better understand the impacts of battery storage to the network and customer including; 1. residential battery potential to support constrained or high solar areas of the network; 2. centralised grid storage benefits vs distributed customer storage benefits; and 3. value of residential demand management control software from a network and customer perspective. iv. In 2015 we assessed the most relevant technologies that will assist in building a 'network of the future'. Residential energy storage was identified as one of the key technologies of the future and an evaluation of potential services, costs, technology and suppliers was undertaken. A number of network locations were assessed for the potential services that residential storage systems could provide. The targeted locations were selected based on AMI voltage profile, high solar PV penetration and customers with suitable properties for the installations. Areas in Northcote, Clifton Hill and Kensington were identified as the preferred network locations for the deployment of residential battery systems. v. A Request for Information (RFI) was issued to the residential storage market to supply suitable residential energy storage solutions that meet the services and technical requirements identified from the future network technology evaluation. A number of proposals were received with different battery manufacturers, configurations and software layers for aggregated dispatch. Supplier selection targeted the

		most technically established and experienced suppliers, whilst also targeting those suppliers most likely to be adopted in high volume by residential customers. Four different residential battery suppliers (20 batteries in total) were chosen for deployment to assess the different battery configurations and impacts. Battery systems were purchased from July-October 2015 with installations commencing in November 2015. All systems will be fully operational in 2016 for a number of dispatch trials. vi. the forecast total procurement and installation cost for the 20 residential battery systems is $500k. The balance of our DMIS will be used to fund these costs. vii. peak demand reductions will be realised through the aggregated dispatch portal that will dispatch residential battery units connected to a single network asset. (b) its associated costs were not: (i) recoverable under any other jurisdictional incentive scheme; (ii) recoverable under any other Commonwealth or State Government scheme; and (iii) included in the forecast capital or operating expenditure approved in the 2011–2015 Distribution Determination or recoverable under any other incentive scheme in that determination. (c) Not applicable **B. Storage investment framework design and analysis (SIFDA)** (a) i. SIFDA involved three main development areas for application of energy storage for demand management: • end-user 'off gridding'; • cold thermal energy storage; and • grid level energy storage on the grid. SIFDA is:

		• non-network in nature as it investigates alternative supply options for customers, load shifting and peak curtailment providing alternative means of meeting demand; • addresses peak and more broad based demand management through identifying best cases for the application of thermal storage, off-gridding and network based storage; • it builds knowledge and capability to efficiently deploy demand management solutions relevant to our network; • non-tariff based; • cannot be funded under other schemes and there is no provision in the 2011-2015 Distribution Determination for this activity; and • costs associated with SIFDA were treated as operating expenditure. ii. The scope of SIFDA was to develop new ideas, challenge existing technical solutions and business models through global benchmarking and the study of best in (storage) class countries. For each storage development area above, the scope was to identify: • suitable technologies (pure storage or hybrid with generation); • design, sizing and initial cost estimate; • improvement through complementary solutions (energy efficiency, demand side management etc.); • role of involved stakeholders, regulatory status, revenue sources; and • construction of a full business case for a standard example of each case. Integration of cases and associated value ranges, solutions and decision rules into a decision-helper tool for the network to make decisions in the future for similar cases. iii. Identify the best technical and economical solutions for energy storage demand management cases, assess each solution's profitability and potential market, provide the network with appropriate tools to assess

		and forecast energy storage projects. iv. Current forecasts are for storage technologies to reduce in cost over the next 5-10 years, with increased storage penetration into the grid to help manage peak load and intermittent/renewable generation. The SIFDA project was picked due to its future network importance and ability to prepare the network for more energy storage demand management opportunities. v. The project was implemented over the period August 2014 to January 2015 and involved engagement of external parties with specific expertise in energy storage. Extensive data was collected from global benchmarks and utilised to determine the most relevant and economical storage cases. vi. Costs for SIFDA were calculated based on hourly rates for internal resources and invoices for external service providers. vii. SIFDA equips us with the knowledge and network case studies for the economical deployment of energy storage for peak shifting and demand management. (b) its associated costs were not: i. recoverable under any other jurisdictional incentive scheme; ii. recoverable under any other Commonwealth or State Government scheme; and iii. included in our forecast capital or operating expenditure allowances in the 2011–15 Distribution Determination or recoverable under any other incentive scheme in that determination. (c) Not applicable
7.3	State the total amount of the Demand Management Incentive Allowance spent in the Relevant Regulatory Year and explain how it was calculated Note: Information provided in response to paragraph 7 of schedule 1 to this Notice will constitute the provision of an annual report for the purpose of paragraph 3.1.4.1 of the AER, Demand Management Incentive Scheme- CitiPower, Powercor, Jemena, SP AusNet and United Energy 2011-15: Part A- Demand Management Innovation Allowance, April 2009.	A. Residential Storage Project - $469k ii. residential battery procurement (x20 units); iii. balance of system materials (inverters, PV array, circuit breakers etc.); iv. battery and solar installations; and v. control and aggregation software for demand management.

		B. Storage Investment Framework Design and Analysis (SIFDA) - $0.130M • cost derived from invoices from external service provider.
8. ADVANCED METERING INFRASTRUCTURE		
8.1	Describe each efficiency improvement made to CitiPower's operations directly or indirectly arising from or associated with the roll out of the Advanced Metering Infrastructure. For example: operational cost savings for CitiPower arising from remote meter reading and connection and disconnection of customers' supplies; more efficient outage detection and rectification; improved accuracy of customer billing.	The benefits associated with advanced metering infrastructure include: i. avoided non AMI meter supply cost for new connections and meter replacements - $790,687; ii. avoided non AMI meter supply & installation cost for fault meter replacements - $152,073; iii. avoided non AMI meter replacements resulting from solar installations - $666,610; iv. avoided cost of routine meter testing costs - $360,294; v. avoided cost of routine non AMI meter reading - $934,705; and vi. avoided cost of non AMI special reads - $673,487.
8.2	For each efficiency improvement identified in the response to paragraph 8.1: (a) explain how it arises from or is associated with the roll out of the Advanced Metering Infrastructure; and (b) if quantifiable, state its amount.	The benefits arise in each case for the following reasons: i. meter supply for new connections and meter replacements – accumulation meter supply - the meter supply cost for accumulation meters that would have been supplied if AMI meters hadn't been used; ii. meter supply and installation cost for fault meter replacements – the meter supply and installation cost for meters that would have been replaced under fault conditions iii. time switch replacements – the number of time switches that would have been replaced if new AMI meters hadn't been installed via the rollout. iv. solar meter replacements / meter reconfiguration - the number of manually read interval meters that would have been installed (replacing accumulation meters) for solar installations. Under the AMI Program, existing AMI meters have been reconfigured for solar installations, avoiding the cost of the meter replacement. v. meter testing costs – the costs of testing that would have carried out if AMI meters hadn't been used; vi. meter reading - the avoided cost to manually read type 5 and type 6 meters as a result of meters now being read remotely; and