

4 July 2017

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Ms Anne Pearson  
Chief Executive  
Australian Energy Market Commission  
PO Box A2449  
Sydney South NSW 1235

Dear Ms Pearson

### **Draft Report – Distribution Market Model**

The City of Sydney welcomes the opportunity to respond to the Commission's recent project of work on a new market model for distribution networks. The City's submission is enclosed. A copy will also be uploaded to the Commission's website.

The City has a long-standing commitment to decarbonisation of the Australian economy.

Specific targets in its vision for Sustainable Sydney include an electricity supply that is at least 50 per cent powered by renewables by 2030.

Consistent with this target, the City favours accelerated roll-out of renewables both within the area governed by the City and more broadly across the electricity supply system in Australia. Initiatives, policies and rules which facilitate accelerated roll-out of renewables should be encouraged.

The City congratulates the Commission for recognising the pace of technological and structural change in the energy arena and for taking the opportunity to explore options that may improve future outcomes for consumer, investors and the environment.

The City does have some reservations about the effectiveness of markets on their own to deliver optimal outcomes for electricity supply. Instead, the City suggests, greater guidance may be desirable, especially in regard to improving outcomes that relate to the environment and social equity.

As well, the City urges caution in regard to proposals that may have unexpected and undesirable consequences. Specifically, removing the prohibition on charging for export of electricity in distribution networks could be profoundly unsatisfactory in public policy terms, prompting decline of the public electricity supply system and onset of the so-called death spiral.

This is of particular concern for areas like the City of Sydney, whose future prosperity is so dependent on resilient, cost-effective, environmentally responsible electricity supply.

Finally, the City encourages the Commission to undertake active consultation with industry participants and other stakeholders on an ongoing basis as it progresses with its proposals to reform future management of distributed energy resources.

Additional information is available from Chris Barrett on (02) 9265 9004 or by email at [cbarrett@cityofsydney.nsw.gov.au](mailto:cbarrett@cityofsydney.nsw.gov.au)

Yours sincerely

A handwritten signature in black ink, appearing to read 'M Barone', with a long horizontal flourish extending to the right.

Monica Barone  
Chief Executive Officer

Enclosure: Submission to Australian Energy Market Commission – Draft report – Distribution market model

**SUBMISSION TO  
AUSTRALIAN ENERGY MARKET COMMISSION**

**DISTRIBUTION MARKET MODEL**

**This submission responds to a draft report  
by the Australian Energy Market Commission on its  
proposed market model for distributed energy resources.**



**PART A: Introduction**

The City of Sydney welcomes the opportunity to make this submission to the Australian Energy Market Commission (the Commission).

The submission is in response to the Commission's draft report describing the development of future markets for "distributed energy resources" in electricity distribution networks.

The City has a long-standing commitment to decarbonisation of the Australian economy.

Specific targets in its vision for Sustainable Sydney include an electricity supply that is at least 50 per cent powered by renewables by 2030.

Consistent with this target, the City favours accelerated roll-out of renewables within the area governed by the City and across the Australian electricity supply system. Initiatives, policies and rules which facilitate accelerated roll-out of renewables should be encouraged.

The City congratulates the Commission for recognising the pace of technological and structural change in the electricity supply industry and for exploring future options that may improve outcomes for consumers, investors and the environment.

However, the City has some reservations about the effectiveness of markets in delivering optimal outcomes for essential services like electricity supply. Instead, greater guidance may be desirable, especially to promote outcomes relating to the environment and social equity.

Further, the City does urge caution in contemplating proposals that may have unexpected and undesirable consequences.

**Retain prohibition on charges for export of electricity**

Removing the prohibition on charging for export of electricity in distribution networks could have profoundly unsatisfactory consequences. This could prompt decline of the public electricity supply system and trigger the onset of the so-called death spiral.

This would be of particular concern for areas like the City of Sydney, whose future prosperity is so dependent on resilient, cost-effective, environmentally responsible electricity supply.

Finally, the City proposes that additional objectives should be added to the cost-reflective pricing principles for distribution networks. The City highlights two objectives in particular:

***"The setting of network tariffs and charges must take into account the long term interest to the electricity consumer that is served by efficient use of energy both now and into the future."***

The reasoning behind this objective is straightforward and would seem unarguable – network tariffs should encourage using less energy, not more.

***“The setting of network tariffs and charges must take into account the relative use of system resources in an efficiently designed and managed system.”***

Again, the reasoning behind this objective is straightforward and would seem uncontroversial – using less system resources should be rewarded with lower tariffs. Developing appropriate local incentives will enable networks to start ‘shaping’ local energy and encourage local generators to deliver effective network support.

## **PART B: City’s understanding of the AEMC distribution market project**

The Commission has undertaken a project to develop a market model for the management of distributed energy resources in the future. This is intended to:

*inform the Commission’s analysis of rule changes submitted to it by stakeholders in response to emerging issues, and guide its advice to governments. It forms part of the AEMC’s technology work program, which seeks to explore whether the energy market arrangements are flexible and resilient enough to respond to changes in technology.*  
(Draft report, page ii)

The framework in the draft report may be applied by the Commission to drive future changes to distribution networks, including the introduction of new charges and incentives and the facilitation of new participants.

Accordingly, it is important to understand what is entailed in the Commission’s preferred scenario, which is described as “optimising” investment in and operation of distributed energy resources, and “overcoming” barriers to new market opportunities.

By distributed energy resources, the Commission means:

*smart energy equipment co-located with consumer load ... [with] ... the ability to respond automatically to short-term changes in prices or signals from wholesale markets or elsewhere in the supply chain. The term 'energy equipment' was intended to include a range of technologies, including battery storage, electric vehicles, rooftop solar photovoltaic (PV) systems, or household appliances such as refrigerators and dishwashers.*  
(Draft report, page 3)

Based on industry feedback, the definition now includes distributed generators.

Large-scale rollout of distributed generators and other distributed resources is recognised as having potentially significant consequences:

*uptake of rooftop solar photovoltaic systems, battery storage, electric vehicles and other technologies at the distribution level in Australia’s electricity sector is having a significant impact on the way that consumers use electricity. Technological innovation is making the functions these devices perform smarter, cheaper and more accessible to a wider range of users. This change is greatly expanding the choices that consumers have to manage their energy needs and can potentially deliver significant efficiency benefits as well as improvements to the reliability and security of the provision of electricity services.*  
(Draft report, page i)

The Commission's proposal is to develop new markets to buy and sell energy-related services at the distribution level in a more dynamic way, responding to price signals. The Commission expresses a strong preference for a market-based approach:

*Where there are barriers or constraints to consumers exercising their choices, the Commission's preference is to address those barriers rather than using regulatory instruments to impose technology-based solutions on consumers.*

(Draft report, page ii)

## **PART C: Overall response**

### **Optimisation of investment in and operation of distributed resources**

The draft report calls for "optimisation" of investment in, and operation of, distributed energy resources. That is, consideration of how to encourage consumer-led investment in distributed energy resources (DER). Consumers, if they choose, should receive the maximum possible benefit of utilising and selling the full range of services that the asset is capable of providing, given transaction and information costs, and technical constraints.

The City observes that there is no particular point at which investment in DER is "optimised" and that (for most distribution networks in Australia at the current time) there is little evidence of overinvestment in DER, especially when compared to some other advanced countries.

Despite the advent of rooftop PV, Australia has one of the lowest penetrations of non-centralised generation. This has been the case for many years, effectively since state-based transmission networks were set up after World War Two.

The City also observes that markets can behave imperfectly and will not necessarily facilitate optimisation of DER. Clearly, some insight and guidance is needed about how electricity generation and consumption is and should be used, both now and in the future.

### **Coordination of distributed resources with the wholesale market**

The Commission asks how distribution networks can, in both a technical and a regulatory sense, enable efficient use of DER in distribution markets and effective access for distributed resources to be coordinated with transmission-level markets.

This is a very material issue, and the City acknowledges our current regulatory environment does require more work. AEMC, AEMO, AER and state-based policies and regulatory frameworks (including state based renewable energy targets) all have a role in this.

However, until and unless all key drivers are considered (including mitigation of climate change) it is not likely either in a technical sense or a regulatory sense to effectively coordinate investment in and operation of DERs to ensure their use is "efficient".

### **Limits to technology neutrality**

According to the Commission:

*In a time of rapid technological change, it is particularly important to enable technology neutrality. Specifying arrangements for a particular technology in the regulatory framework*

*may lock it in, whilst locking out evolving new technologies that might not even have been anticipated when the design was considered. This means that design should consider what is supplied rather than how it is supplied*  
(Draft report, page 26)

In the City's opinion, technology neutrality may be unrealistic, unless there is recognition of externalities like climate change. Also, the City notes, choices that we collectively make about different technologies will lead to different frameworks for future electricity supply.

For example, the linked issues of security of supply and reliability of DER may be dealt with in particular ways in networks that incorporate high levels of large-scale hydropower, for example, by installing large-scale pumped storage.

In systems that are reliant on emerging technologies such as batteries to manage intermittency, other network designs may be appropriate. Distributed batteries may provide a solution to both network peaks and to generator intermittency. As such, they may be able to provide more flexible solutions than large-scale pumped storage.

Moreover, neutrality is not evident in terms of the regulatory design for the National Electricity Market.

For example, different prescriptions are proposed to manage generation in transmission networks to ways that generation is managed in distribution networks.

Currently, distribution networks are permitted to smear transmission network costs across all consumers, whether or not these consumers receive their electricity from generators in transmission networks. By contrast, the draft report contemplates imposing direct costs on generators in distribution networks to supply energy to consumers.

### **Limited insight into distribution markets**

In the City's view, the concept of distribution markets in the draft report is too narrow and the complexity of behaviour of electricity supply system participants is not fully recognised:

- The focus is on the needs of electricity consumers, not on electricity customers generally. Many consumers are also generators and may also provide network support. Overlaps and interactions between these different roles should be considered.
- The difference in scale of generators within distribution networks is not recognised, and the difference in market power between distribution-based generators and transmission-based generators is not considered.
- The role of (large) generators that are also retailers (and vice versa) is not considered.

If these factors are excluded, the potential insights that can be drawn from the Commission's project are more limited. Moreover, if these factors are ignored, the risk is that the framework will act in the interest of some electricity supply participants at the expense of others.

### **Scope of acknowledged consumer concerns is restricted**

Electricity consumers are certainly concerned about reliability, security and cost of supply

but the interests of electricity consumers (and/or customers) extend beyond these matters. It is neither desirable nor practical to externalise such other issues:

- Consumers are not uniform in terms of their experience of markets. Markets that work well for some consumers do not work well for other consumers. It is not possible to satisfy all consumer needs equally, and talk of “optimising” markets obscures this.
- Social equity is clearly a concern for many consumers and customer advocates and is alluded to in the current review.
- Electricity producers and consumers share a single planet. If environmental considerations are ignored or downplayed, then in the long term very dysfunctional economic and technical outcomes can be anticipated, as Finkel has observed.

The Commission states:

*market design and regulatory frameworks may need to be modified to better align individual decisions with the long-term interests of consumers more generally. For example, to the extent that consumers make decisions regarding distributed energy resources that impose costs on others, those costs should be signalled to the consumer so that the costs can be internalised and incorporated in the consumer's decision-making.* (Draft report, page 25)

In the City's opinion, this may be difficult in practice. As well, it ignores the obvious corollary - consumers that invest in distributed resources sometimes achieve savings for other consumers. This often reduces or defers the need for future network spends. No action to reward such customers is proposed in the draft report.

The interests of different classes of consumers do not always align, and innovations in market design may not overcome these differences. A primary consideration remains, how best to ensure that all consumers remain committed to the use of public electricity supply systems. This is fundamental to ensure that such systems are viable in the future.

### **Belief in the efficacy of markets must be tempered**

The proposition that development and operation of new markets is the only (or best) way to provide good outcomes for both electricity producers and consumers is as much a statement of ideology as evidence. The role of markets may be important, but markets can behave imperfectly and can lead to dysfunctional solutions.

Regulatory frameworks for electricity are undergoing profound readjustment and adaption in many advanced economies, in response to environmental considerations and in response to technological innovation. More consumers in more locations now have viable alternatives to the traditional model of centralised supply.

Much of this innovation is iterative, and adjustments to change has been gradual, for example, to acknowledge climate change and economic inequity. Guidance may be desirable in such circumstances.

Existing models of guidance could be explored further. The Commission notes:

*Centralised planning and decision making directly by governments or regulated entities would allow for an orderly rollout of distributed energy resources, and is consistent with the*

*fact that some of the services that could be provided by distributed energy resources are currently provided by regulated DNSPs.*

*This appears to largely be the approach taken by the New York Public Service Commission who is implementing the Reforming the Energy Vision (REV) initiative, which, among other things, seeks to transform distribution network businesses into platform providers for an energy market at the distribution level. The initiative subsidises particular investments and technologies, and includes direct investments by regulated energy businesses.*  
(Draft report, page 20)

The Commission sees drawbacks in such an approach, because this:

*will likely foreclose the considerable potential benefits of a well-functioning market, and may result in trade-offs being made between different objectives on behalf of consumers. It also means that consumers, not competitive businesses, bear the costs of investment risk ... regulation, however well designed, is likely to be a second-best alternative to well-functioning markets at promoting economic efficiency in the long-term interests of consumers.*

(Draft report, page 20)

While respecting the Commission's view, the City considers that well-designed regulation may well be in the interests of consumers in ensuring that balanced outcomes are achieved in electricity supply markets. Markets, no matter how well designed, are full of frailties and can fail, sometimes spectacularly.

### **Risk to ongoing viability of public electricity supply**

Continued use of the public electricity supply system by most consumers is not in question, however, the level to which consumers will rely on the public system is.

Any proposals for new processes and markets must be sensitive to the reality that, thanks to the overall level of affluence and the pace of technological change, many consumers now have viable alternatives, especially those customers who place high value on self-reliance.

Disincentives for consumers to remain within the public electricity supply system - e.g. loss of open access for distributed generators or imposition of charges for export of energy from distributed generators - may have outcomes well beyond a simply reallocation of costs between classes of electricity system users. In this context, the "death spiral" is relevant.

It is generally considered that it is not economically rational for many consumers to disconnect from the grid, at least not at the current time. However, disconnection from the grid could become quite viable for a large number of consumers, especially low-density residential consumers, with only minor changes in the relative costs of make-your-own electricity and grid-supplied electricity.

The more that some groups of consumers start to defect from the grid, the higher the costs for those consumers who remain, including vulnerable consumers.

As has occurred with other formerly impregnable forms of monopolistic public service, such as landline telephony, alternatives can and do emerge. Even in competitive fields like financial services, alternatives to traditional forms of banking are emerging. All groups of consumers need to see value in staying part of public electricity supply networks.

## **PART D: Response to questions in the draft report**

### **Question 1**

**Do stakeholders consider that there are any other barriers to the development and implementation of cost-reflective network tariffs?**

**How material are these barriers?**

**Are there other means for them to be addressed?**

In relation to cost-reflective tariffs, the Commission notes:

*ensuring that consumers have visibility of the signals being sent through these tariffs relies on .... retailers passing them on through their retail offerings in a way that accommodates the needs of their customers ... these signals not otherwise being distorted.*

(Draft report, page 53)

Cost-reflective network tariffs are relatively new. Only a preliminary view can be expressed about how well networks are implementing them. However, there are some high-level questions about the usefulness of the long-run marginal cost (LRMC) approach. The City expresses a number of concerns about LRMC:

*1 – LRMC is only relevant to future costs that relate to replacement, reinforcement or augmentation of network assets.*

No guidance is given as to how residual costs are to be shared between network customers, even though (for some networks) these may be over 90 percent of costs over a regulatory period. Actual historic costs might be allocated on one basis (e.g. perceived equity) while anticipated forward costs are allocated on another basis (LRMC). This blunts the price signal implied by a cost-reflective approach.

*2 – Networks are largely responsible for interpreting what is meant by LRMC*

The Commission itself identified quite a range of LRMC models when it introduced cost-reflective tariffs a couple of years ago. Each model may have quite different effects, depending on how tariff classes are defined or how costs are categorised and dispersed. Without more active guidance, and especially in an environment of stagnant or declining demand, the signal to customers from LRMC will be at best muted.

*3 – LRMC as applied is not really LRMC. At best, it is medium-run future marginal cost.*

The use of LRMC within a single regulatory period does not truly reflect future cost trends. This is illustrated by the change in pricing signals for Ausgrid residential customers between FY 2014 and FY 2015. In FY 2014, the gap between the lowest and highest of the inclining block tariff was over 50 per cent for residential customers, whereas in FY 2015 the gap had dropped to around 16 per cent. In fact, the standard retailer for the Ausgrid franchise area current currently charges less for the highest block of consumption than for the intermediate consumption block!

*4 - LRMC for distribution networks may not coincide with cost of services for transmission networks or cost of energy for retailers.*

Most customers have only a limited awareness of the different sources of costs in their electricity bills. If transmission costs are smeared across all distribution network customers, how does this provide meaningful pricing signals? Furthermore, retailer costs may not align with distribution network costs, any more than transmission network costs.

*5 – Tariff classes are too broadly spread and too divorced from drivers of electricity network investment for efficient sharing of costs within tariff classes.*

Public scrutiny of electricity network costs is limited and a very large proportion of the knowledge which underlies the allocation of costs between groups of customers is known only to a very small number of industry participants, be they consultant pricing specialists, network asset engineers or economic regulators.

Many distribution networks have large and disparate franchises that compound the insensitivity of tariffs. For example:

- the daytime peak for central Sydney (the area covered by the Powering Sydney's Future initiative) runs from 11am to 5pm (recent Transgrid presentation). It is quite different from the Ausgrid peak period i.e. 2pm to 8pm
- the winter peak in southern NSW and the Northern Tablelands does not match the summer peak in inland NSW and the North Coast.

The effect of cost-reflective tariffs is also blunted by the decisions of some governments to impose an opt-in approach to TOU metering or to impose uniform state-wide tariffs.

Given such basic constraints, the use of cost-reflective tariffs may not be the best ways to implement greater awareness of the implications of consumer actions

In addition, the City considers that other objectives that should be included in the pricing principles that are applied by distribution networks.

These objectives are as follows:

***“The setting of network tariffs and charges must take into account the long term interest to the electricity consumer that is served by efficient use of energy both now and into the future.”***

The reasoning behind this objective is straightforward and would seem unarguable – network tariffs should encourage using less energy, not more.

The implication of this is potentially profound – network tariffs (and other pricing elements) should always encourage efficient use of energy and of energy infrastructure.

Networks should not be rewarded for building (or replacing) infrastructure and then encouraging greater use of network infrastructure by the way that network tariffs are structured. Rather, networks ought to be rewarded for keeping networks smaller (rather than larger) and more flexible (able to respond to changes in generation technology and type).

***“The setting of network tariffs and charges must take into account the relative use of system resources in an efficiently designed and managed system.”***

Again, the reasoning behind this objective is straightforward and would seem uncontroversial – using less system resources should be rewarded with lower tariffs.

A standardised framework for valuing local electricity exports creates price signals to weight generation towards the times of day and seasons when the local network needs it.

Developing appropriate local incentives will enable networks to start ‘shaping’ local energy and encourage local generators to deliver effective network support.

The more important benefits for networks from enabling local energy is likely to be in the medium to long term, in 'future proofing' their business model.

By offering more attractive and fairer network terms for local energy, networks can actively promote the use of existing local grids as an alternative to grid defection. A new modular approach to charging and paying for grid services could create new revenue streams for networks, and de-incentivise behind-the-meter solutions.

#### **Question 2**

**Do stakeholders consider that there are any 'missing markets' or 'missing prices' beyond those that will be implemented through cost-reflective network tariffs? If so, what are these?**

The City has argued in many forums that - both in terms of future network spends and in terms of future environmental outcomes - substantial benefits can be achieved through accelerated roll-out of distributed generation.

On balance, for electricity consumers in general, more benefits are likely than dis-benefits through accelerated roll-out of distributed generation, particularly if this is meshed with other energy management tools such as distributed energy storage.

The value of accelerating this investment was convincingly demonstrated in economic modelling undertaken by the Institute for Sustainable Futures in 2016.

To create a level playing field for local generators, and accelerate roll-out of local generation, the City (together with the Total Environment Centre and the Property Council of Australia) proposed a change to the National Electricity Rules in 2015 to facilitate introduction of local generation network credits.

The rule change would have improved financial rewards for local generators – ranging from sugar mills making electricity from waste heat, to office buildings with generators in the basement to residents with rooftop solar installations – when they export power to the public electricity grid.

It would have done so while also reducing consumer electricity prices (by comparison to what they would otherwise be) over the longer term.

The rule change anticipated that, in addition to the volume-based payments, network credits could include a supply availability payment.

This would reflect how much local generation is supplied at particular times (typically but not necessarily, a number of half hour intervals of high demand).

Network credits were intended to be relatively inexpensive to implement and administer, and to increase the number and output of new and existing local generators. While the payment is made to generators, generators could pass the credit on to consumers through pricing.

Network efficiency will be enhanced by a system of cost-reflective network charges that both encourages new entrants and incentivises higher output by existing local generators where this is economically efficient.

**Question 3**

**Do stakeholders consider that an open access regime will continue to be appropriate in an environment of increasing uptake of distributed energy resources and more constraints on distribution networks?**

**If not, what principles or considerations should be taken into account in determining whether a different access regime is more appropriate?**

As the City understands it, firm access is not always on offer in distribution networks.

This is evident in the standard network connection agreement offered by Ausgrid, the largest network service provider in NSW:

*The Generator will ... not operate the Generating Facilities so that ... electricity delivered from the Generating Facilities into Ausgrid's Distribution System exceeds the lesser of the Agreed Maximum Export or the Capacity of Ausgrid's Distribution System from time to time*

As well as restrictions on capacity from time to time, applicants for negotiated connections can experience excessively large up-front costs for their projects.

Meanwhile, standard (non-negotiated) connections are only offered for very small generators, typically under 10 kW and in some cases even lower. The cumulative effect of large numbers of small connections may be significant, but they are no more significant (in terms of future network costs) than widespread adoption of mass-market devices like air conditioning units and vehicle charging units.

**Question 4**

**Is there support for the Commission's proposal that the deletion of clause 6.1.4 of the NER be explored?**

The City does not support the proposal to explore deletion of clause 6.1.4 of the NER (prohibition on charging for export of electricity in distribution networks).

The City considers that it would be counterproductive and unreasonable to remove the prohibition on export charges while-ever either of the following conditions applies.

First - - while ever overall benefits for electricity consumers through greater roll-out of generation in distribution networks outweighs any dis-benefits. This situation is likely to endure for the foreseeable future, especially if distributed generation is linked to other distributed resources like storage.

There may be some locations in some networks where further roll-out of local generation does not result in system savings; however, such examples are not numerous in either extent or impact, and they can be dealt with in other ways. For example, cost-reflective connection costs could be imposed, or future generator connections in such areas could be required to incorporate energy storage.

Second - - while ever comparable treatment is not proposed for transmission-based generation.

Transmission-based generators do not pay volumetric charges for sending out energy. Instead, the cost of receiving electricity are met by consumers (other than a very small number of very large customers such as smelters) through network tariffs that neither itemise the transmission-level component of transporting electricity nor distinguish the transmission costs for particular sources of generation.

**Question 5**

**Are there any other aspects of the development of Australian standards that are relevant and should be considered?**

The City makes no comment in response to this question.

**Question 6**

**Do stakeholders see value in the AEMC (or other party) reviewing the technical requirements that DNSPs apply to the connection of distributed energy resources?**

The City acknowledges the merit of reviewing technical requirements that DNSPs apply to connection of distributed generators and other energy resources. However, such a review must be open to the view that networks are still too restrictive (rather than too facilitative) in connecting distributed generators.

The Commission conducted a review of the standards for connection of embedded generators under Chapter 5A about two years ago, and this did lead to some modification of the rules for embedded generator connections.

However, for many negotiated connection applicants, the rules remain firmly weighted in favour of networks (not applicants) and time taken to assess applications can be far too long.

**PART E: Conclusion**

The City congratulates the Commission on recognising the pace of technological and structural change in the electricity arena and on seeking to develop options that may improve outcomes for consumers, investors and the environment.

However, the City does have some reservations about over-relying on markets to deliver optimal outcomes for future electricity supply.

Instead, the City considers that greater guidance can be desirable, especially for improving environmental outcomes and social equity.

Further, the City urges caution on proposals that have unexpected and undesirable consequences. Specifically, removing the prohibition on charges for export of electricity in distribution networks may have profoundly unhappy outcomes in public policy terms, prompting decline of the public electricity supply system and triggering onset of the so-called death spiral.

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Chris Barrett Commercial Manager Green Infrastructure  
Chris Derksema, Director Sustainability Strategy

4 July 2017

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