

GRID 101 SUMMARY

WHAT WE DID

During spring 2021 Future Supply Engagement Sessions, participants told us they wanted to learn more about power generation and transmission. On March 15th and 16th, we presented to 36 members of the public from across the province, including a Grade 7 class from Prince Albert.

The introductory information session covered:

- How we generate power and balance our supply options
- How power moves across the grid
- What considerations go into our day-to-day operations
- Considerations as we plan for the future

WHAT'S NEXT

Watch [our website](#) for upcoming information sessions and updates to future supply planning.

QUESTIONS AND ANSWERS:

1. How expensive (% wise) is the combination of batteries and solar/wind in comparison to your cheapest option?

We are in the beginning phases of exploring a utility-scale battery energy store system in Regina. You can stay up to date with what we learn [here](#).

2. What is the cost between different sources?

There are several ways to break down the cost of various power sources and the cost to operate each different power source. Ultimately, we need to balance the cost of each of these sources into our mix to ensure the result supports our goal of providing reliable, cost-effective, sustainable power to our customers and the communities we serve.

3. Why doesn't SaskPower focus more on energy efficiency to control the demand for power?

SaskPower is investigating options for Demand Side Management, or energy efficiency tools to offset peak demand periods or reduce demand as a

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whole.

4. Is there any work being done on microgrids?

Yes. SaskPower is looking at how, in specific locations, microgrids could improve service to customers and reduce its costs to serve those customers.

5. If 30% of vehicles became electric by 2030 how would that impact the ability of current infrastructure to handle that load?

SaskPower monitors and studies the impact that charging electric vehicles will have on the power grid. Charging during off-peak hours will allow SaskPower to serve this load and minimize grid capacity improvements. In areas where EV ownership is higher, we expect that the grid will need updates. SaskPower will use data from smart meters and SGI registrations to monitor demand and make updates as needed.

6. If electric vehicles use expand will SP require homes to have 200-amp services to facilitate the increased load?

Currently, SaskPower does not require homes to have a 200-amp service for electric vehicle charging. Level 1 (120 V) charging is available to all customers from their existing house service. Customers are encouraged to contact their electrician to determine if any service upgrades are needed for faster level 2 (240 V) residential charging and meet Canadian Electric Code. More information can be found [here](#).

7. What are the barriers to increasing intake from MB, AB, ND Hydro?

With our existing import contracts with Manitoba, there isn't much capacity left. We have 150 MW of capacity to import and export with Alberta. For North Dakota, there are restrictions on the US side of the border that limits how much power we can bring into Saskatchewan. We are looking at expanding interconnections to add resiliency and reliability to the grid. You can learn more on [Interconnections with Our Neighbours \(saskpower.com\)](https://www.saskpower.com/interconnections).

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8. Will the underground lines be replaced with overhead lines?

SaskPower assesses the qualities of each line before it is determined whether it will be overhead or underground. Some of these factors include cost, reliability, and location.

9. How do you bury underground power lines? How are underground lines different than overhead?

Underground power lines are different than overhead power lines. Underground power lines have a thick insulation. This insulation prevents moisture from getting to the lines. The line is then trenched into the ground. A variety of machines are used to trench the lines like backhoes, trenchers, and plow cats.

10. Why are overhead lines more long-lived than underground lines? Or why is there such a difference in the life of a buried line vs. overhead?

Moisture can creep into a line either as it ages, or as a result of damage from wildlife (gophers or moles). The moisture then creates a path from the power line to ground and creates a short or fault. If a power line is in the air, there's no direct contact with the ground around it.

11. How are line inspections done? Are they ongoing?

In underground power lines a weakness or fault occurs and then causes a power outage. To find the fault in the line, the line is trenched until the fault is found. The power line is then repaired and buried back underground.

In addition to immediate repairs, crews monitor lines and proactively maintain infrastructure.

12. What is the cost difference between overhead and underground power lines?

The cost difference of the lines themselves is minimal. Overhead and underground power lines need a different type of transformer. Overhead lines use pole top transformers and underground uses padmount transformers. The padmount transformer cost is much higher than pole top. The life cycle is another key factor in cost. As mentioned previously, we do

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not get the same life expectancy from underground primary cable as we do for classic overhead (wood pole) infrastructure. Underground cable will typically last 35 years, whereas a wood pole may last 65+ years.

13. I read SaskPower is looking to residents for some power generation. How does that work?

You can learn more about our Net Metering program [here](#).

14. Are you going to have a talk on net metering in the future?

We held engagement sessions on Net Metering in June 2021. We committed to continue those conversations in the future.

15. I would happily expand the PV panels on my property. Why would doing that cancel my net metering contract?

When Net Metering was changed in 2019, existing Net Metering customers were not affected. Expanding the size of your existing Net Metering installation means re-evaluating the system impacts for potential issues which also necessitates a new agreement. New agreements are subject to the terms and conditions at the time they are signed, meaning you'd lose the benefits under the former Net Metering program agreement.

16. What contribution is net metering playing in meeting our needs?

According to our most recent Saskatchewan Rate Review Panel submission, in 2020/21, SaskPower's Net Metering customers delivered more than 20 GWh to the grid.

17. Why are there so many Cathedral neighbourhood power outages in Regina even in weather that is not adverse?

Wildlife is the main cause of power outages in the Cathedral area. Along with the mature trees and creek, there is also a long feeder line that supplies power to the area. The wildlife, such as birds and squirrels cause most of the damage. To prevent wildlife contacts, we have installed more protection on the equipment. To avoid trees contacting the power lines, we have increased the vegetation management.

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Since March of last year, we have experienced 3 outages due to loss of transmission supply from the substation that supplies power to the area. This is not typical. We have increased redundancy to the area but distribution lines to homes continue to cause issues.

We developed a committee that is dedicated to monitoring reliability in Regina. Please continue to report any power outages by calling 310-2220.

18. Does SP have financial obligations to use power generated by private solar/renewable or support its export? Or are these private entities responsible for storage of this excess electricity?

SaskPower has several long-term Power Purchase Agreements (PPAs) with Independent Power Producers (IPPs) who have developed renewable generation facilities in the province. Under these PPAs, SaskPower purchases all of the energy produced, in accordance with the terms of the PPA, whenever the facility is generating electricity. These types of PPAs best fit intermittent renewable generation which cannot be relied on to be available on a consistent basis.

19. Is the reason that we can't have 100% renewable power due to an outdated power generation grid? Renewables can be baseline power, there is reputable information that this is possible and not just in warm climates.

In Saskatchewan, we must rely on a variety of power technologies because no one option can meet all our province's needs due to:

- Our unique mix of hot summers and cold winters
- Our relatively small and dispersed population
- Our limited connections to other provincial power systems

Some other jurisdictions can generate enough hydro generation potential to offset their emissions by increasing reliance on hydro electricity. We have built to our full capacity of hydro generation in Saskatchewan at this time.

Other provinces, such as Ontario, already have nuclear power and sites that are licensed for new nuclear development.

We face a significant challenge meeting the federal requirement to reach

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zero greenhouse gas emissions by 2050.

- We are not yet at the point we can build small modular reactors (SMRs).
- Renewable energy like wind and solar are not reliable enough to sustain our power needs during cold snaps and longer winter nights.
- Battery storage technology is not advanced enough to store the power we would need from solar and wind to compensate.

We also expect there will be an increased need for power over the next several years as other parts of the Saskatchewan economy move to electrification.

With all of these considerations, natural gas-fired generation is the only baseload supply option that can be developed at the scale needed to meet Saskatchewan's interim needs.

In the future, we are looking at solar and wind with battery storage and potentially nuclear from small reactors. At this time, no decisions have been made. But we will be engaging with our stakeholders, Indigenous rightsholders and customers to come up with the best plan for our power future.

20. Is SaskPower planning on creating more solar and wind power in the future?

Absolutely – we are planning to add more than 800 MW of solar and wind power to the grid by 2023. You can learn more about current projects [here](#).

21. How does SaskPower manage the security of its systems? I am curious about cyber security.

SaskPower meets or exceeds industry best practices when it comes to cyber security and is continually auditing these practices to protect against cyber attacks.

22. Will Saskatchewan have 100% smart meters in future?

Yes – we are planning to install smart meters to all customers as soon as meter supply is available. The residential installation project is currently on pause due to the global shortage of microchips — key parts of smart

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meters.

We look forward to continuing to install meters for our customers once we receive a sufficient supply from our manufacturer.

23. Where does nuclear fit in the future? Do personal reactors have any potential?

We are considering nuclear as a future option, but no decisions – including the technology – have been made.

24. Is nuclear power safe?

SaskPower is committed to the highest levels of safety in all of our operations, and we bring the same commitment to the potential development of nuclear power. As we evaluate nuclear power from SMRs, we're working closely with Canada's three nuclear power utilities (Bruce Power, New Brunswick Power and Ontario Power Generation) to learn and understand their best practices for the safe development and operation of nuclear power.

Canada also has a strong, globally-respected and highly-effective nuclear regulator – the Canadian Nuclear Safety Commission (CNSC) – and has a long history of safely and effectively managing used nuclear fuel and other waste streams that result from the generation of nuclear power. SaskPower will need the CNSC's approval to proceed at multiple stages of the development of SMRs.

25. How much baseload power is from natural gas, co-generation and coal with carbon capture and storage?

The breakdown of SaskPower's generation mix can be found [here](#).