BC HYDRO'S LONG-TERM PLAN

PRESENTATION TO THE COLUMBIA BASIN REGIONAL ADVISORY COMMITTEE

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FOR GENERATIONS

March 12, 2015

THE INTEGRATED RESOURCE PLAN

- Every 3-5 years BC Hydro develops a flexible, long-term strategic plan to meet B.C.'s growth in electricity demand over the next 20 years.
- The Integrated Resource Plan (IRP) focuses on making prudent investments in conservation and clean energy, and on keeping future electricity supply options available.
- The government accepted the current plan on November 25, 2013.

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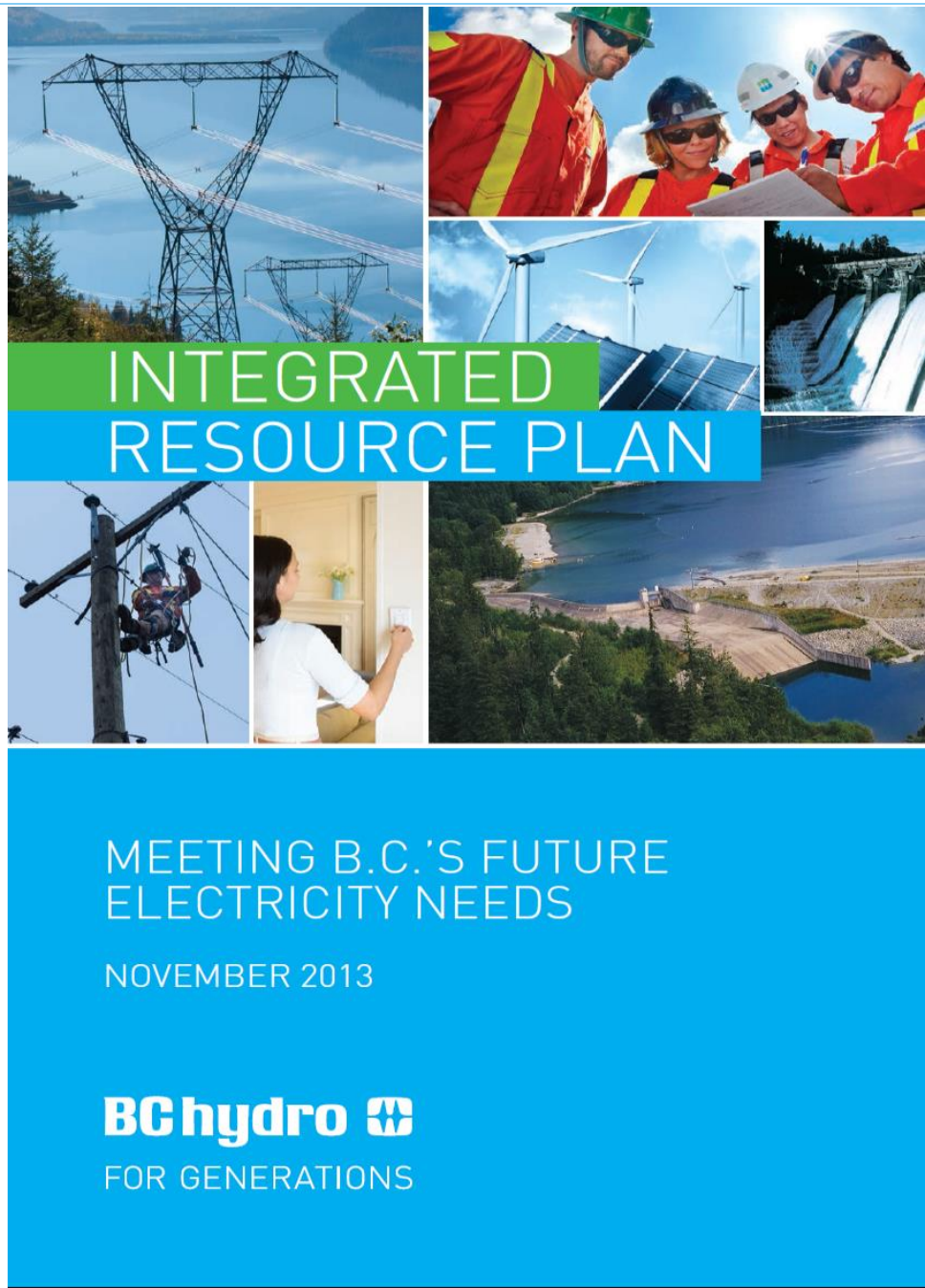
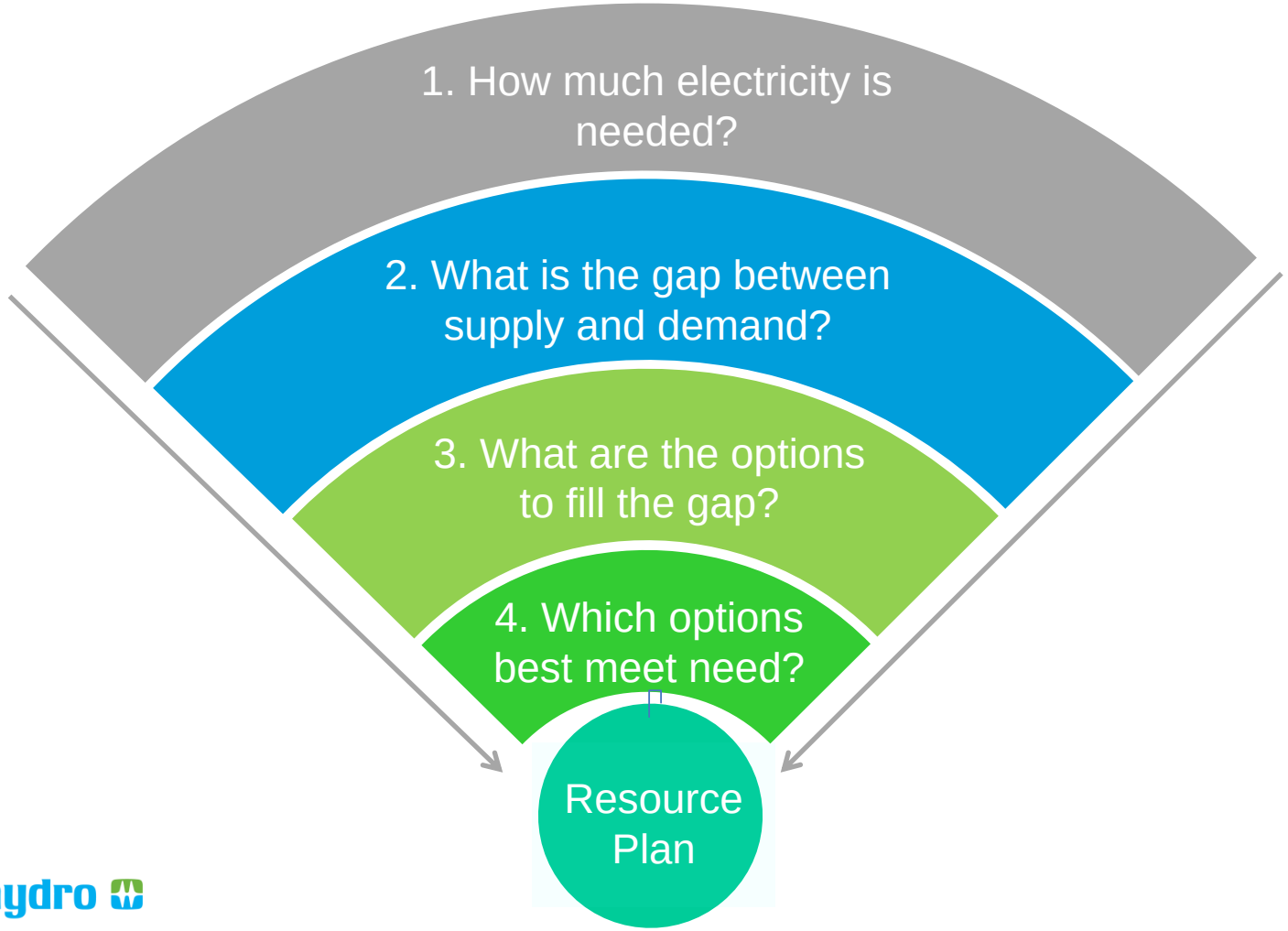


GUIDANCE FROM PROVINCIAL ENERGY POLICY

- The *Clean Energy Act* requires BC Hydro to be electricity self-sufficient by 2016 and to respond to objectives in the Act including:
  - Generating at least 93% of all electricity from clean or renewable sources in B.C.,
  - Ensuring rates remain among the most competitive of those charged by public utilities in North America,
  - Meeting at least 66% of the expected increase in demand through conservation and efficiency by 2020.

IRP - KEY PLANNING QUESTIONS



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LATEST DEMAND FORECAST

- BC Hydro produces a long-term (30 year) forecast approximately once a year.
- The most recent (May 2014) forecast continues to show an **expected 40% growth in demand over the next 20 years**.
  - 40% growth is before demand side management and LNG (liquefied natural gas)

DEMAND GROWTH

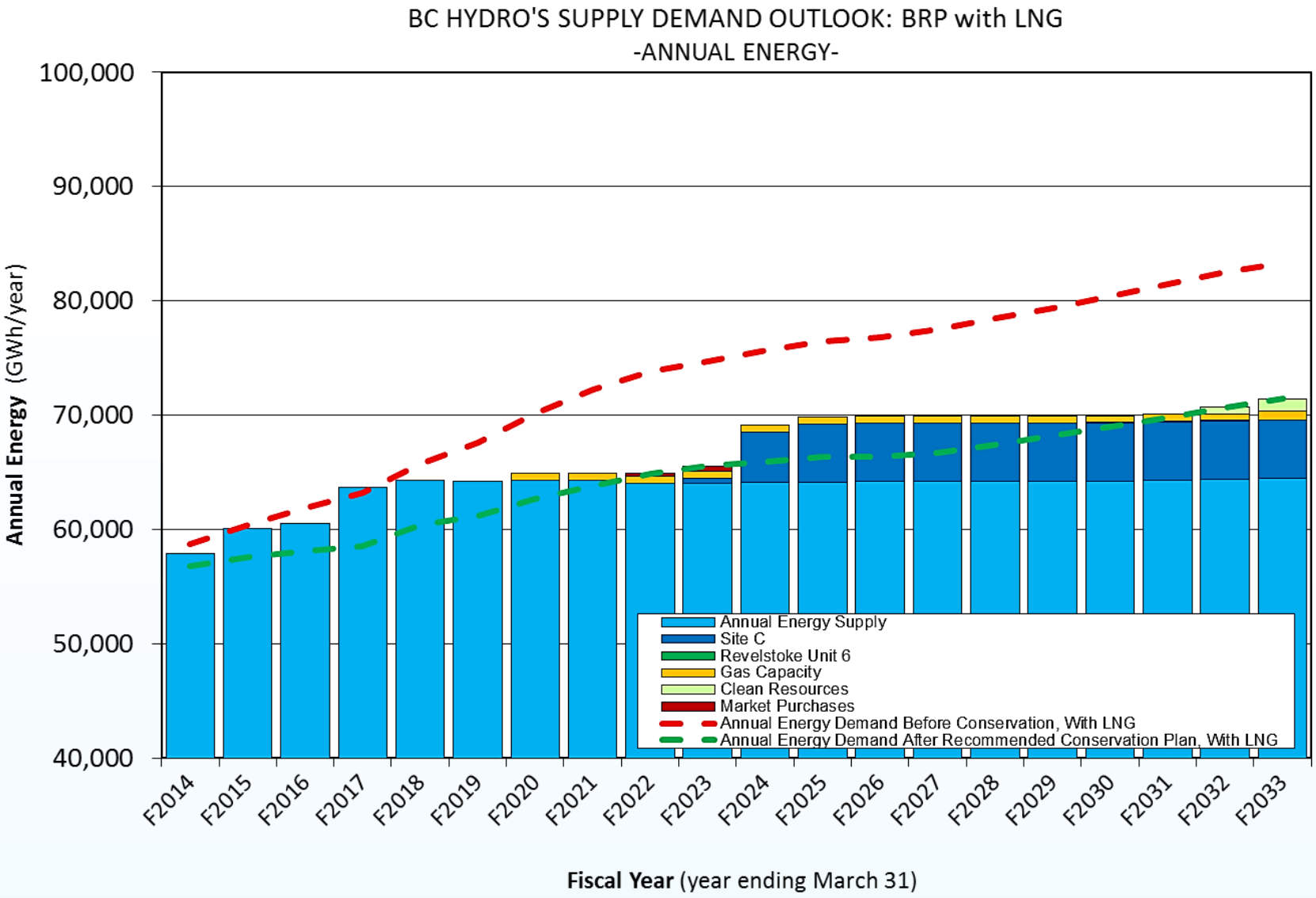
Significant but uncertain demand growth in the North.

Forecast contains:

1. LNG (Liquefied Natural Gas) development in the North Coast and Lower Mainland– 360 MW / 3,000 GWh by 2020 with increased certainty that LNG will take some power from BC Hydro.
2. Mining in the Northwest – demand nearly doubling by 2022.
3. Shale Gas in the Northeast – growth in Montney Basin of nearly 500% (1,000 GWh today, increasing to 5,000 GWh by 2033).

NEED FOR BOTH ENERGY AND DEPENDABLE CAPACITY

- Electricity systems need both energy and dependable capacity.
- Some energy resources, such as wind or run-of-river, are intermittent which means they are not always available to generate electricity.
    - e.g. when there is no wind or when the rivers are not flowing. Intermittent resources must be backed up by dependable capacity which is always available.
- Hydroelectric dams with storage, like those in the Peace and Columbia systems, are a key source of dependable capacity because water can be released when needed or stored to be used later when demand is high, such as on a cold evening in winter.



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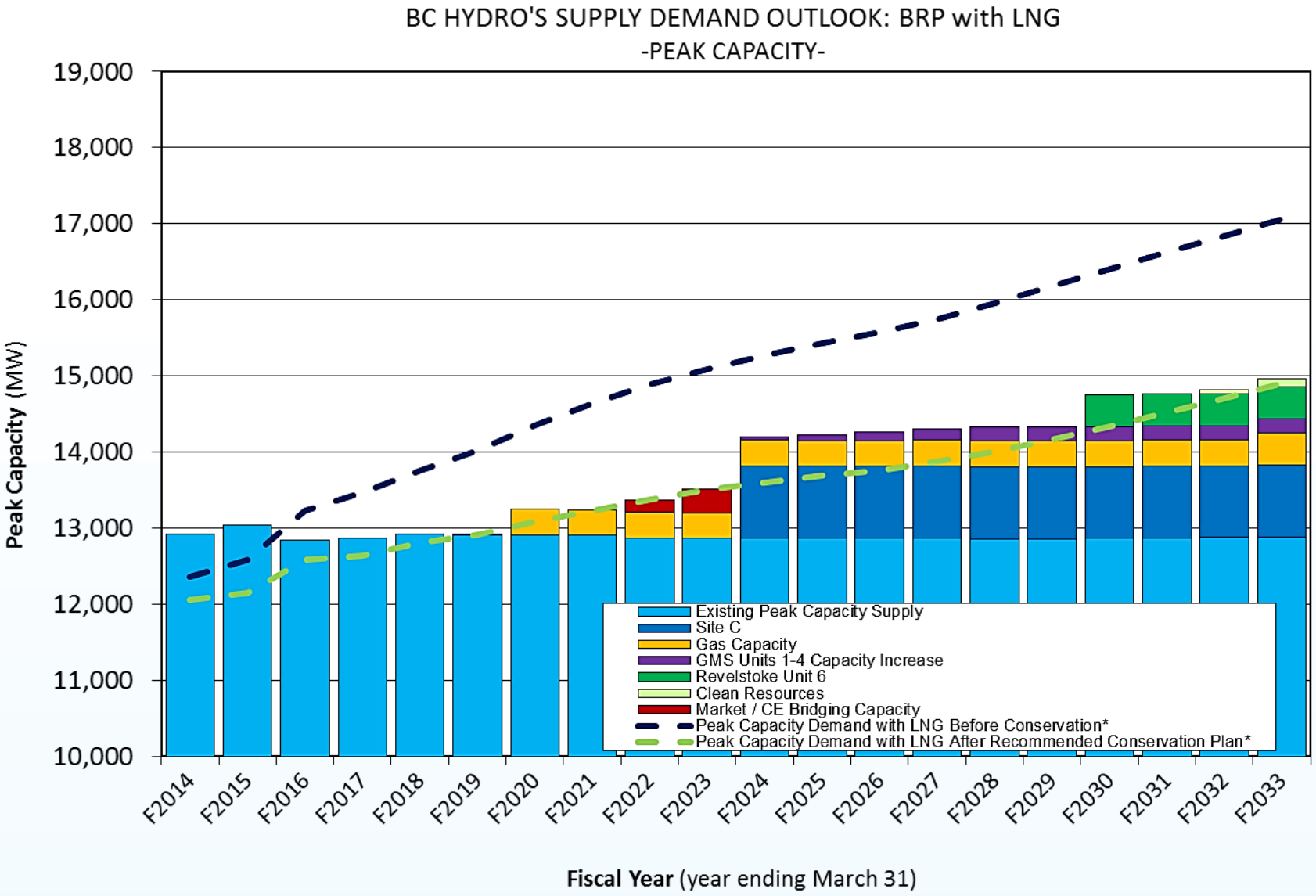

* including planning reserve requirements

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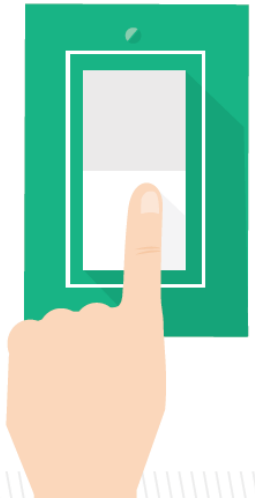
IRP RECOMMENDED ACTIONS THAT BEST MEET NEED

- **Conserve First** – target saving 7,800 GWh/year in energy and 1,400 MW in capacity by F2021.
    - This is the equivalent of reducing new demand by approximately three quarters.

- Recommended actions include:
    1. Moderate current spending and maintain long-term target.
    2. Implement a voluntary industrial load curtailment program.
    3. Explore more opportunities to leverage off codes and standards.



British Columbians are already saving enough power to meet the annual needs of more than **400,000 HOMES.**

BC Hydro will continue to offer incentives to help homeowners, businesses and industrial customers become more energy efficient and lower their electricity costs

IRP RECOMMENDED ACTIONS THAT BEST MEET NEED

- **Powering Tomorrow** – Recommended actions include:

  1. Build Site C for earliest in-service date of F2025 (5,100 GWh/year and 1,100 MW of dependable capacity). Approved by Government in Dec 2014. Construction to start in summer 2015.

  2. Pursue bridging options for capacity (e.g., market purchases and power from the Columbia River Treaty).

  3. Advance transmission reinforcement in Peace Region.

  4. Clean Energy Strategy to support the clean energy sector and promote opportunities for First Nations.

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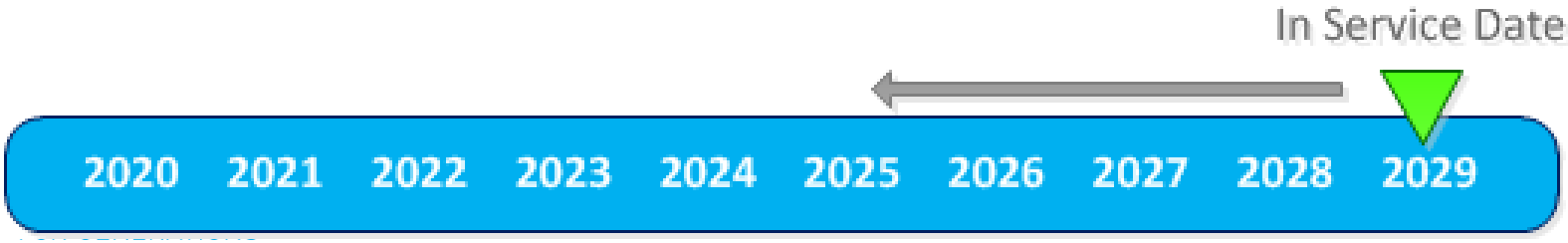
IRP RECOMMENDED ACTIONS THAT BEST MEET NEED

- **Support LNG** – Explore clean energy supply options, if LNG demand exceeds available resources.
  - Analysis is underway across the organization on the LNG opportunity.
  - BC Hydro and the Province are negotiating electricity agreements with customers.
  - Numerous transmission interconnection studies are underway/completed.
  - Transmission reinforcements underway by BC Hydro and funded by users.
- **Planning for the Unexpected**
  - ***Advance Revelstoke 6 for the earliest in service date of F2021***.
  - Advance GM Shrum upgrades for F2021.
  - Investigate natural gas generation for capacity on the North Coast to support LNG
  - Investigate Fort Nelson area supply options.

REVELSTOKE UNIT 6 TIMING

- The existing Plan states that Revelstoke Unit 6 will be required by F2029 but a number of uncertainties could advance this date.
    - Conservation and efficiency savings reviewed annually (targeting 1300 MW of capacity by F2021),
    - Future electricity demand forecasts typically updated annually,
    - LNG proponents final investment decisions expected in the next few years and the role of gas in supporting LNG,
    - Capacity contribution of intermittent generation (i.e. wind and run-of-river),
    - The amount we can rely on the market for capacity prior to Site C (300 – 500 MW).
- As more information emerges the date will become more certain.

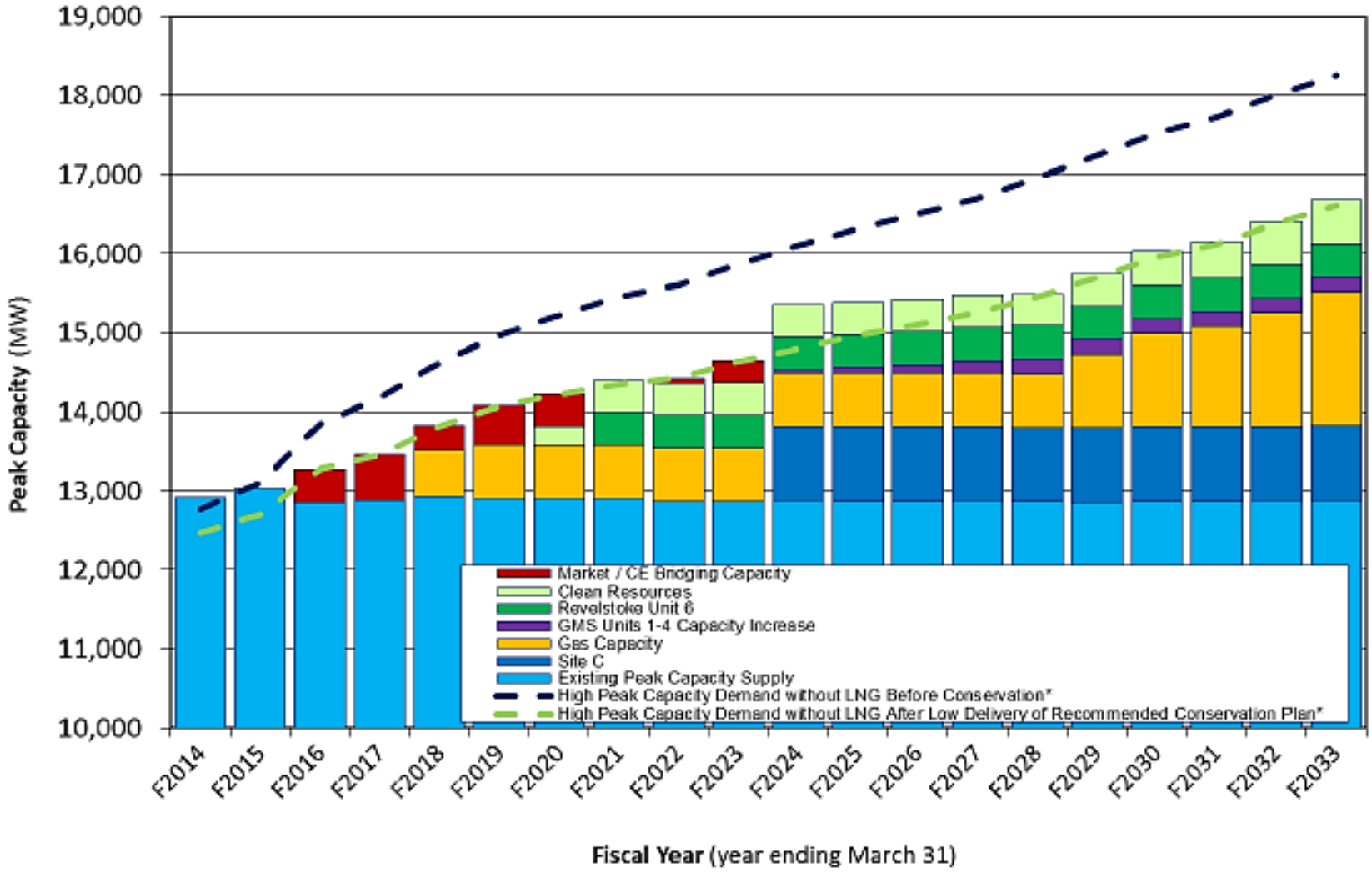


POTENTIAL SHORTFALLS

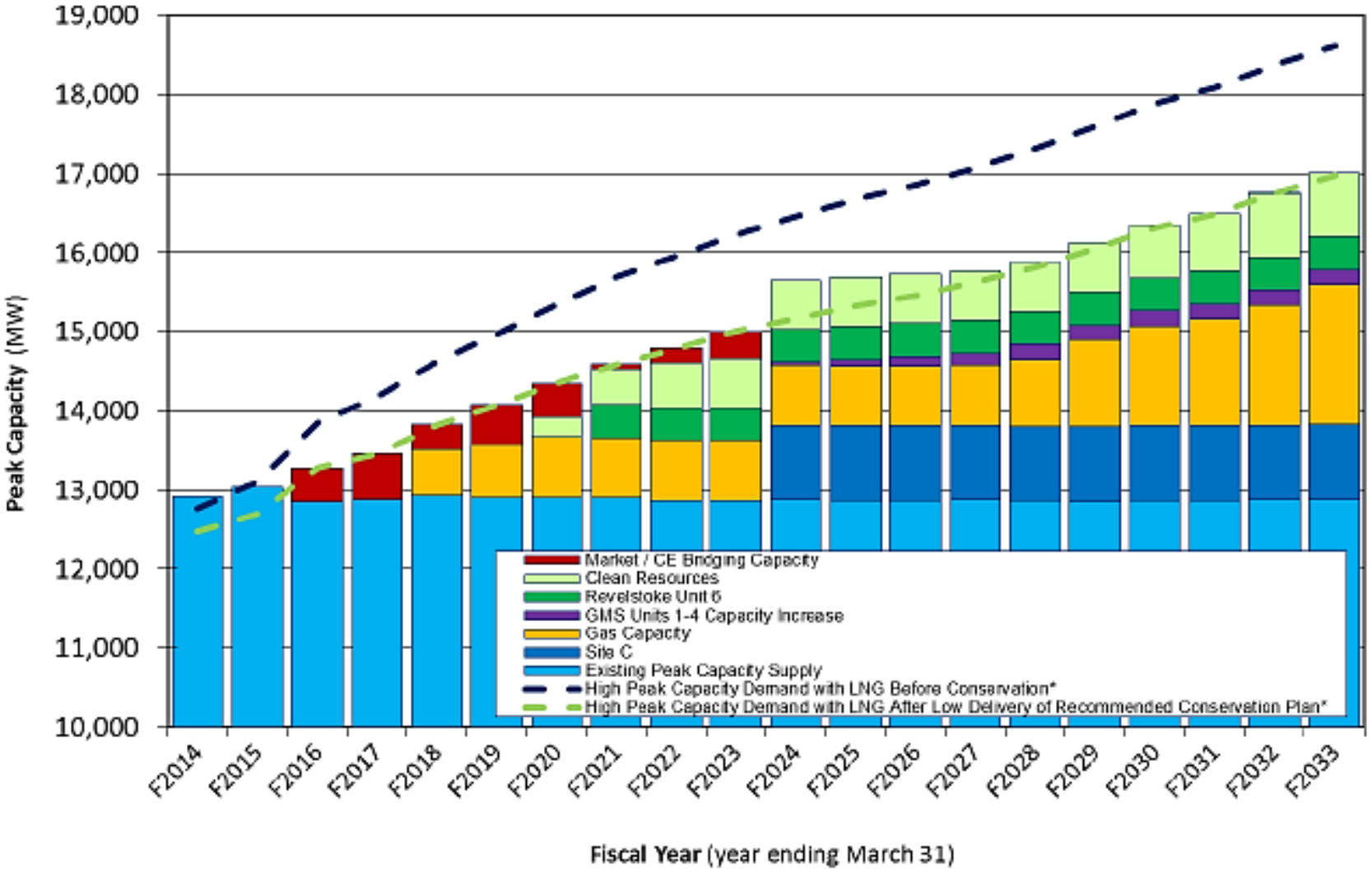
2013 IRP Table 9-14

Uncertainty	Rationale	Capacity Shortfall[16,17] (MW)		Energy Shortfall (GWh/year)	
		F2017	F2033	F2017	F2033
General Load Forecast Uncertainty	Peak load and energy requirements can increase as a result of sustained growth and/or low temperatures at winter peak.	700	1,550	5,350	10,050
DSM Deliverability Uncertainty	The DSM target has a significant range of deliverability uncertainty where the variability is driven by implementation of codes and standards, customer response to programs and rates.	100	500	550	2,600
Total Reduction		800	2,050	5,900	12,650

Contingency Scenario #1 – Capacity Supply Demand Outlook with No Additional LNG



Contingency Scenario #2 – Capacity Supply Demand Outlook with Additional LNG



Taken from the 2013 IRP Summary

PLANNING FOR THE UNEXPECTED

	RECOMMENDED ACTIONS
15. Advance Revelstoke 6 Resource Smart project	Advance the Revelstoke Generation Station Unit 6 Resource Smart project to preserve its earliest in-service date of F2021 with the potential to add up to 500 megawatts of peak capacity.
16. Advance GM Shrum Resource Smart project	Advance Resource Smart upgrades to GM Shrum Generating Station Units 1–5 with the potential to gradually add up to 220 MW of peak capacity starting in F2021.
17. Investigate natural gas generation for capacity	Working with industry, explore natural gas supply options to reduce their potential lead time to in-service and to develop an understanding of where and how to site such resources, should they be needed.
18. Investigate Fort Nelson area supply options	Investigate procurement options to serve future Fort Nelson load.

NEXT STEPS

- The IRP will be reviewed this fall.
  - BC Hydro will continue to monitor uncertainties.
- The next full IRP will be in 2018 and at least every 5 years after that.

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Projects ▾ | BC Hydro's System ▾ | Acquiring Power ▾ | Customer-Based Generation | Meeting Energy Demand ▾

Home › Energy in B.C. › Meeting Energy Demand › Integrated Resource Plan (IRP)

INTEGRATED RESOURCE PLAN (IRP)

Meeting future energy needs

The IRP is a flexible long-term strategic plan to meet B.C.'s growth in electricity demand over the next 20 years. It focuses on making prudent investments in conservation and clean energy, and on keeping future electricity supply options available. On November 15, 2013, BC Hydro submitted the plan to government and it was accepted on November 25.

About the IRP

What is the Integrated Resource Plan?

Development process

Planning a clean energy future.

Get involved

Overview of public, First Nations and stakeholder consultation.

Document centre

The Integrated Resource Plan and related reports.

Past plans

Previous long-term electricity plans.

How to reach us

Contact the Integrated Resource Planning project team.

MEETING ENERGY DEMAND

- Forecasting Growth
- **Integrated Resource Plan (IRP)**
  - About the Integrated Resource Plan
  - Development Process
  - Get Involved
  - Document Centre
  - Past Plans
  - How to reach us
- Power Generation Options
- Operations Planning

See also

10-year plan for BC Hydro rates

Join the IRP mailing list

Sign up for email updates on the IRP.