
MARCH, 2022

2019 to 2021 Annual Planning Outlooks Comparisons

**Resource Integration & Demand and Conservation Planning
Power System Planning**

Background

- A comparison of the demand forecasts, capacity surplus / deficit and the unserved energy forecasted in the 2019, 2020 and 2021 Annual Planning Outlook (APO) is shown



1. APO Demand Forecasts: 2019-2021

Summer Peak Demand Forecast across APOs

Demand Forecast Highlights

• 2019 – Energy Efficiency Case

- Continued economic, demographic and technological trends through an extended period of relative stability
- Modest growth in the residential and commercial sectors, flat demand in the industrial sector, strong growth in the agricultural sector through 2030, steady growth in the transportation sector

• 2020 – Scenario 1

- Pandemic recovery trends after volatile 2020, shallow economic recession in 2020-early 21, rapid recovery in 2021-22, return to pre-pandemic electricity demand levels by end of 2022
- Initial slow but accelerating growth in the residential sector, near-term recovery and long-term flat demand in the commercial and industrial sectors, agricultural sector growth extended to early 2030s, confirmation of previous transportation sector forecast

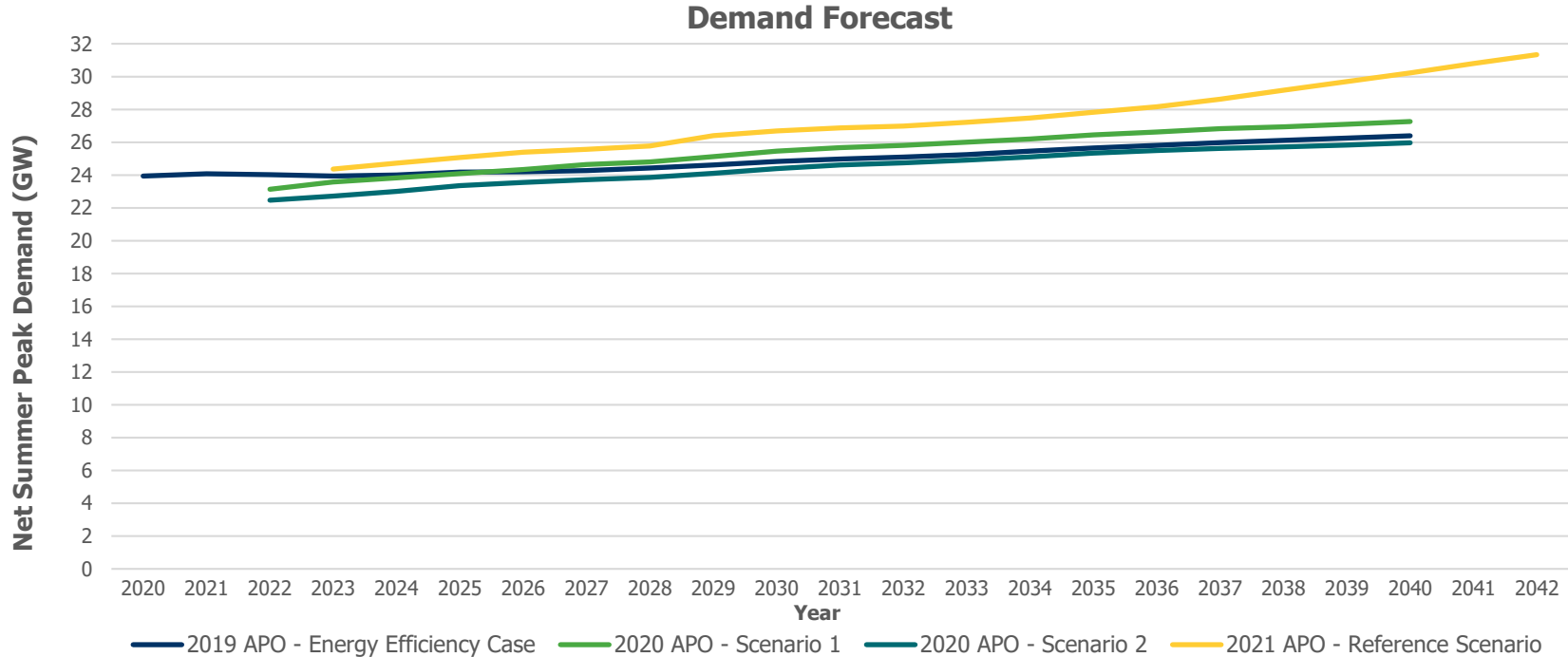
• 2020 – Scenario 2

- Assumes a deeper economic recession from 2020 to the end of 2021, prolonged and significant pandemic impacts, followed by a slow, multi-year economic recovery starting in 2022, return to pre-pandemic electricity demand levels by mid 2024
- Flat demand, followed by slow growth in the residential and industrial sectors, slower demand growth than scenario 1 in the commercial, agricultural and transportation sectors

• 2021 – Reference Scenario

- Electrification trends emerging in industry, policy environment and customer preferences
- Strong growth in the residential sector in the longer term, industrial mining in the near term, industrial primary metals in the medium terms, confirmation of agriculture forecast, significant growth in the transportation sector in the long term

Summer Peak Demand Forecast across APOs - Graph



2021 APO Demand Forecast Methodology Update

Methodological improvements implemented in the 2021 APO include:

- **Reference year:**

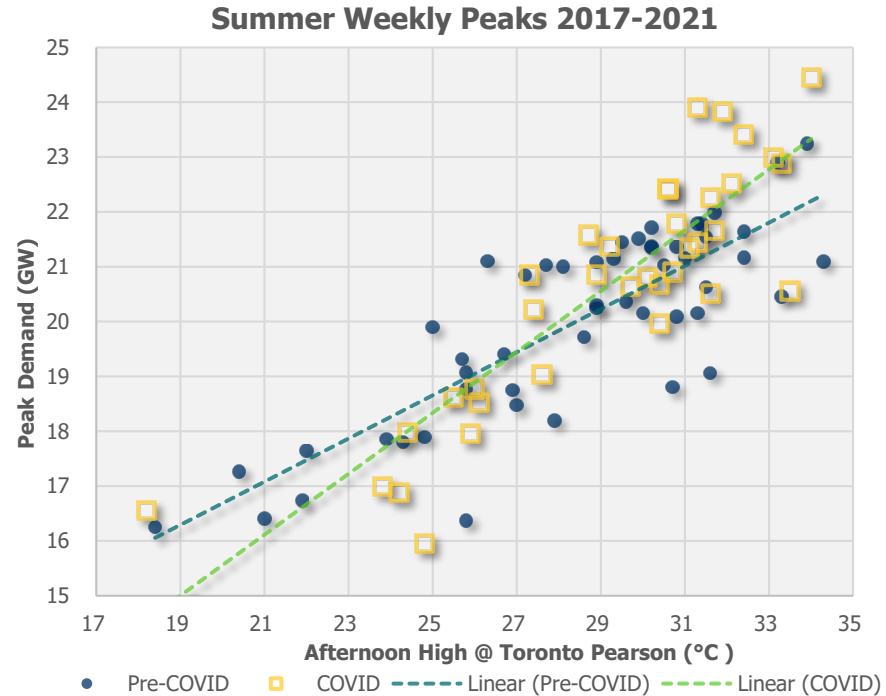
- Annual changes in hourly demand are calibrated to a specific year 0 of hourly demand
- Previous APO demand forecasts were calibrated to a actual historic year of hourly demand (2020 APO was based on year 2019 hourly demand)
- 2021 and future APO demand forecasts are calibrated to a forecasted future year of hourly demand, consistent with the Reliability Outlook demand forecast (2021 APO is based on a forecasted year 2022 hourly demand)
- Updated process produces hourly demand profile without impacts of unique historical events (e.g. blackouts, etc.)

- **Normal weather conditions:**

- APO demand forecasts are at normal weather conditions by normalizing reference year demand profile:
 - Previously used weather scenarios and historic weather data through 2018, selecting median weather and corresponding demand levels
 - 2021 and future APO demand forecasts use simulations based on historic weather through 2019 and selection of median demand levels
- Updated process provides more accurate normal weather demand and increased flexibility to determine other weather demand scenarios

Summer Peak Demand Volatility Since Pandemic Onset

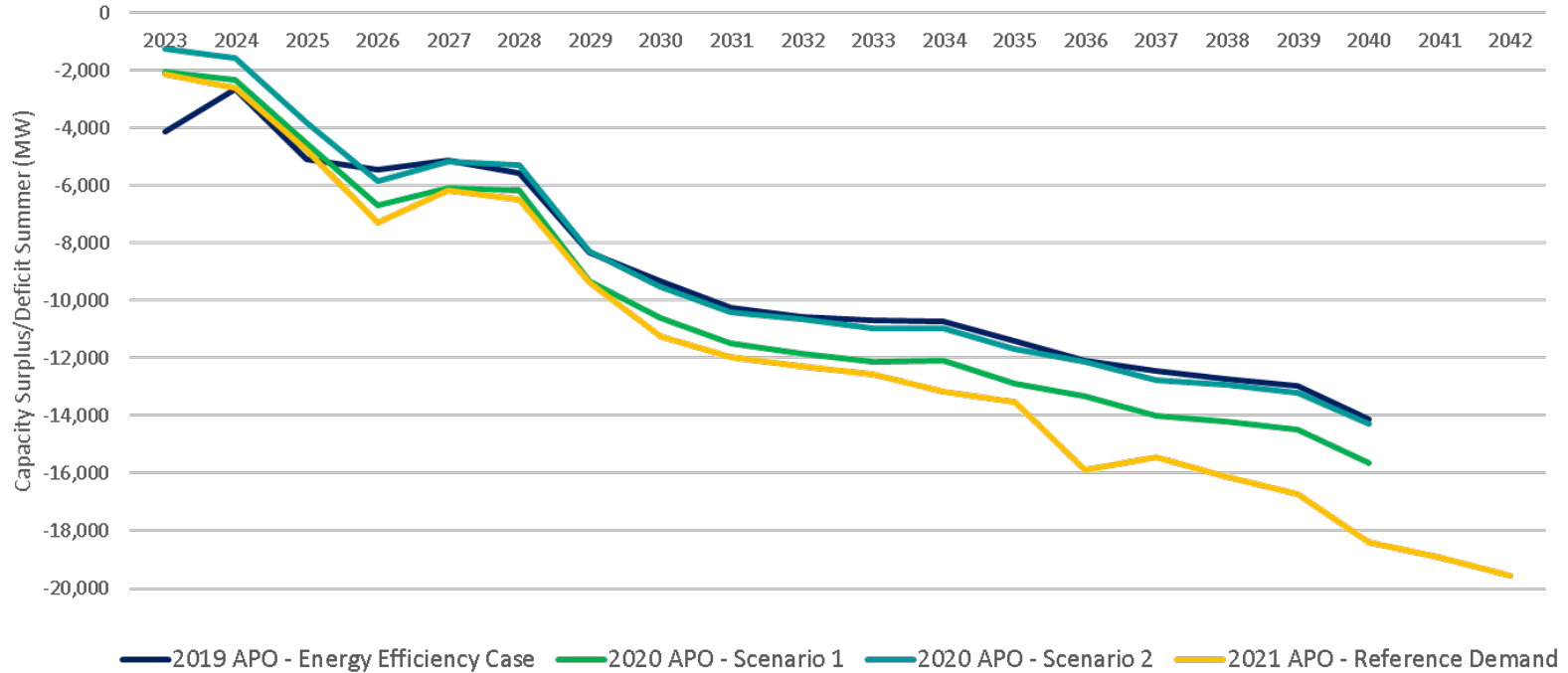
- System demand including summer peak demand has been generally stable over the 2017-2021 time period, with the exception of the COVID-19 pandemic
- Weekly summer peaks vs temperature highlights the volatility caused by the pandemic and its mitigation, including social distancing measures, working from home practices and capacity limits





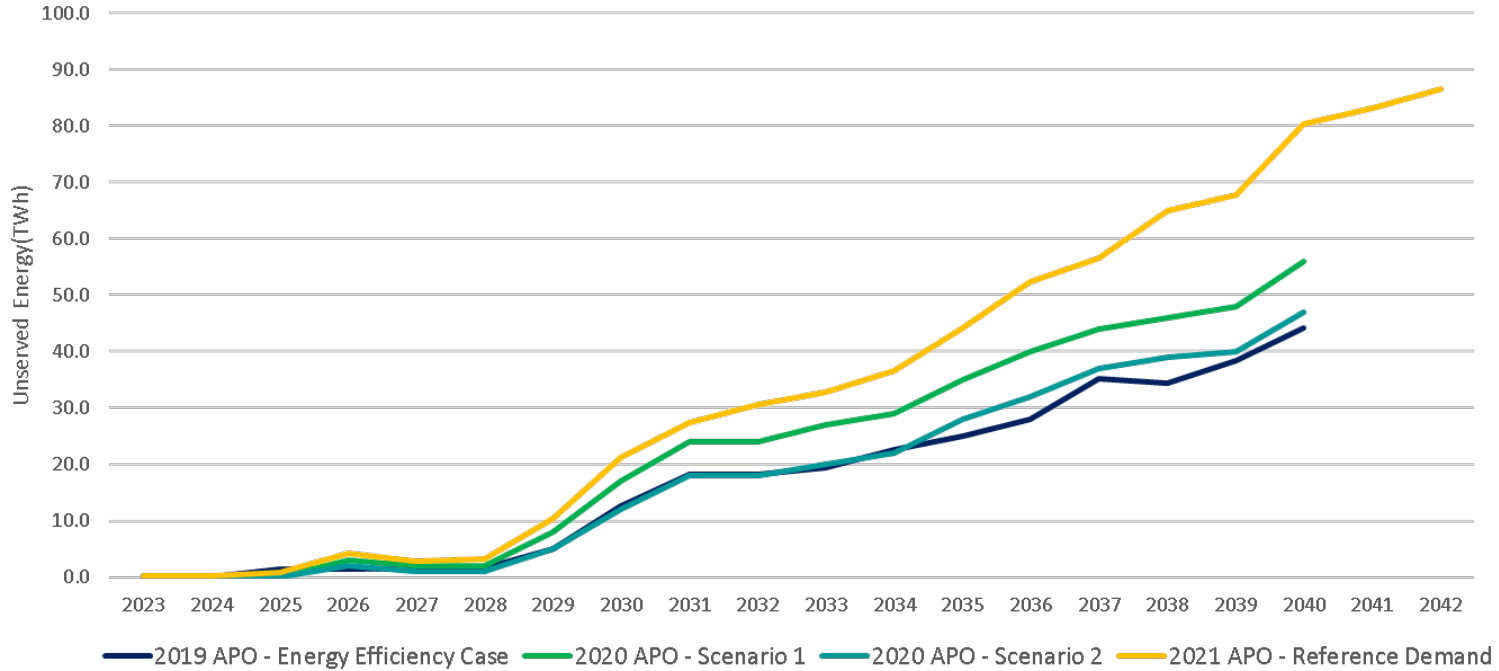
2. APO Capacity Outlooks, Unserved Energy, Supply Assumption: 2019-2021

Consistent trends in summer capacity surplus/deficit



Assuming no availability of existing resources post contract expiry

Consistent trends in unserved energy



Assuming no availability of existing resources post contract expiry

Supply mix has remained quite steady over the years with continuous updates and improvements made to modelling

2019 APO

2020 APO

- Pickering retirement from 2022/2024 to 2024/2025
- Implemented new AWS wind simulation profiles purchased in 2019
- Updates to nuclear refurbishment schedule
- Updates to reflect 2019 DR Auction results
- Updates to ICAPs (installed capacity), EFORds (equivalent forced outage rate), planned outages
- Updates to transmission transfer capabilities
- Updates to fuel forecast, emission cost, variable cost, exchange rate
- Updates of load/generation data of neighbouring jurisdiction provided by model vendor
- Continuous improvements to tools and modelling

Supply mix has remained quite steady over the years with continuous updates and improvements made to modelling (cont'd)

2020 APO

2021 APO

- Inclusion of 250 MW of non-firm imports
- Modelling improvements of solar profiles to use 10 weather years instead of a single year
- Updates to nuclear refurbishment schedule
- Updates to reflect 2020 Capacity Auction results
- Updates to ICAPs (installed capacity), EFORds (equivalent forced outage rate), planned outages
- Updates to transmission transfer capabilities
- Updates to fuel forecast, emission cost, variable cost, exchange rate
- Updates of load/generation data of neighbouring jurisdiction provided by model vendor
- Continuous improvements to tools and modelling

Supply mix comparisons - capacity by year end

