CANADA ARIZONA BUSINESS COUNCIL

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Arizona's Energy Challenge: Generation, Transmission & Opportunities for Canadian Partnership

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Arizona's energy opportunities are no longer simply producing enough electricity—it is delivering reliable power to where it is needed. Under normal operating conditions, the state has adequate generating capacity supported by a diverse energy portfolio that includes natural gas, nuclear, solar, hydroelectric power, and rapidly expanding battery storage and wind. However, electricity demand is growing at one of the fastest rates in North America, driven by rapid population growth, semiconductor manufacturing, artificial intelligence (AI) data centers, advanced manufacturing, electric vehicle production, mining expansion, and widespread electrification. Large industrial projects requiring hundreds of megawatts each have created an unprecedented development pipeline, with future electricity demand projected to reach significant numbers over the next decade. Remember this is a development pipeline, not demand that will appear. Today, the greatest challenge is no longer generating electricity; it is also connecting new customers to the electrical grid quickly

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enough to support Arizona's economic growth.

Arizona's emergence as one of North America's premier advanced manufacturing hubs is fundamentally reshaping the state's electricity profile. Semiconductor fabrication facilities operate continuously and require exceptionally reliable, high-quality power with virtually no interruption, while AI data centers have become equally energy intensive, with many new campuses requiring significant amounts of electricity. As global technology companies continue investing billions of dollars across Greater Phoenix and Southern Arizona, utilities must not only meet significantly higher demand but also deliver greater reliability, redundancy, and resilience than ever before. Energy infrastructure has become one of the most important factors influencing corporate site selection, making dependable electricity a key driver of Arizona's long-term economic competitiveness.

Although Arizona possesses sufficient generating resources under normal operating conditions, its transmission and resource delivery network has become one of the state's most significant utility priorities. Many high-voltage transmission corridors are approaching capacity, while new transmission projects often require many years to permit, finance, and construct far longer than the timelines of most economic development projects. Utilities also face growing interconnection queues as renewable energy projects, battery storage facilities, and major industrial customers compete for access to the grid. Without substantial investment in transmission infrastructure, substations, and grid modernization, many states risks delaying billions of dollars in private investment despite having adequate generation available elsewhere in the region. Record summer temperatures and increasing peak electricity demand further underscore the urgency of building a stronger, more resilient generation procurement, transmission and grid system.

Arizona's electric utilities have already begun implementing one of the largest energy infrastructure build-outs in the state's history. Looking further ahead, APS, SRP, and Tucson Electric Power (TEP) are jointly evaluating Small Modular Reactors (SMRs) and other advanced nuclear technologies capable of providing reliable carbon-free base-load electricity during the 2030s. At the same time, utilities are expanding interstate natural gas pipeline capacity and upgrading building and modifying existing energy production capacity and continuing to procure thousands of megawatts of new solar generation, battery storage, flexible natural gas generation, and demand-side resources to meet one of the fastest-growing electricity markets in North America, the most notable project being the Desert Southwest Expansion Pipeline, as seen below:

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Arizona also faces an emerging challenge that lies largely outside its control—reduced water availability for generation cooling and the declining hydroelectric output from the Colorado River. The Hoover Dam and Glen Canyon Dam and Colorado River have historically provided valuable carbon-free electricity while helping stabilize the regional grid. However, prolonged drought and declining water levels in Lake Mead and Lake Powell and issues between the upper and lower basin have created concern about hydroelectric generation in future years. Hydropower represents a share of Arizona's electricity supply, it remains an important dispatchable resource during periods of peak demand. Continued declines in reservoir elevations could further increase Arizona's dependence on natural gas, nuclear energy, battery storage, renewable generation, grid participation and expanded transmission infrastructure. Continued declines in reservoir elevations could further increase Arizona's dependence on natural gas, battery storage, and renewable generation that use less water for cooling. However, Arizona’s premier nuclear plant, Palo Verde, is already a first in the station reactor utilizing 100% reclaimed water. Continued innovations around cooling technology and recycled water will be critical to the desert southwest.

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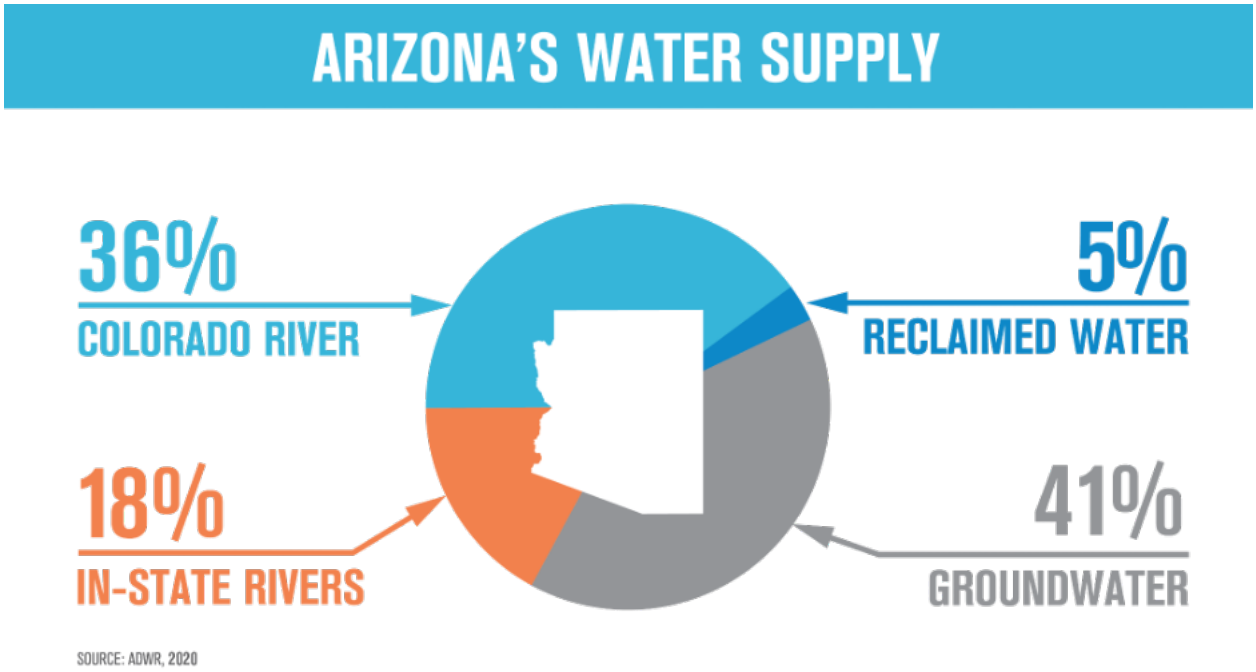

Arizona's energy future is already under construction. The challenge is not a lack of planning or investment but ensuring that generation, fuel infrastructure, transmission systems, substations, and permitting processes are completed quickly enough to support one of the fastest-growing economies in North America. Utilities will need to construct additional transmission corridors, expand and modernize substations, deploy advanced digital grid technologies, strengthen cybersecurity and physical security, and improve overall system resilience. Transmission infrastructure and power generation have become strategic economic assets that enables industrial growth, strengthens national security, and supports Arizona's long-term competitiveness.

Meeting Arizona's long-term energy needs will require a coordinated statewide strategy that prioritizes both generation and transmission. Accelerating permitting, strengthening regional interconnections, investing in utility-scale solar, battery storage, flexible natural gas generation, advanced geothermal resources, and next-generation nuclear technologies will all be essential. Distributed generation, microgrids, demand-response programs, and energy-efficiency initiatives can also improve reliability while reducing peak demand. Regional cooperation will become increasingly important as Arizona strengthens transmission connections with neighboring states and expands cross-border energy cooperation with Mexico and other states on the grid, improving flexibility, reliability, resilience, and long-term economic growth throughout the Southwest.

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Canada can play an important role in helping Arizona meet these long-term energy objectives. Canadian utilities, engineering firms, infrastructure investors, and renewable energy developers possess decades of experience designing, financing, constructing, and operating some of North America's most reliable electric systems. Canadian companies are already making significant contributions throughout Arizona. Tucson Electric Power (TEP), owned by Canada-based Fortis Inc., continues investing in transmission expansion, generation resources, and grid modernization throughout Southern Arizona. Stantec, PCL, Norda Stelo and other companies can and do contribute engineering expertise in transmission design, substations, environmental permitting, and grid modernization around the world and are always here to help Arizona, while companies such as Capital Power, Pattern Energy, and Brookfield Renewable bring extensive experience in renewable generation, battery storage, transmission development, and infrastructure investment across North America and Arizona. Canadian pension funds and infrastructure investors as well as Canadian banks with debt and bonding from Canadian banks like the Royal Bank of Canada (RBC) can also provide long-term capital that aligns well with the decades-long lifespan of utility infrastructure and can become valuable partners as Arizona undertakes one of the largest energy investment programs in its history.

Arizona's long-term success will depend on strategic planning, timely permitting, sustained infrastructure investment, and strong collaboration among utilities, regulators, policymakers, and the private sector. By expanding generation, strengthening transmission, modernizing the electric grid, and leveraging the expertise and investment of trusted North American partners, Arizona can and will continue attracting world-class manufacturing, technology, mining, and industrial investment while ensuring reliable, affordable and resilient electricity for decades to come. Canadian companies are helping, and stand ready to offer more should it be needed by Arizona, thus furthering the Canada Arizona relationship.