CANADA ARIZONA BUSINESS COUNCIL

PROJECT HOURGLASS

Chairperson: John Take

CABC Project Hourglass: Water Augmentation for Arizona's Future Growth

Arizona's future depends on its ability to secure a sustainable water supply. As one of the driest states in the U.S., Arizona faces unique challenges in maintaining a reliable water supply for its growing population and industries. Currently, the state is operating with water infrastructure that dates back to the 1940s, and the demand for water is growing faster than the available resources. **Project Hourglass** is an ambitious initiative aimed at addressing Arizona's water crisis through conservation, infrastructure upgrades, and innovative water augmentation strategies. This project envisions a cooperative approach between the public and private sectors, focusing on sustainable solutions to secure new water resources for Arizona's future.

The Vision: A Comprehensive, Multi-Phase Water Solution

Project Hourglass is designed to address Arizona's water needs through a three-phase approach:

PHASE 1: Efficiency, Conservation, and Water Reuse

Goal: Improve water use efficiency and reduce waste to make the most of Arizona's current water resources.

- **Problem**: Around 35% of Arizona's potable water is lost annually due to outdated infrastructure, evaporation, and inefficient water use practices. These losses come from aging pipes, inefficient irrigation systems, and inadequate water management policies.
- **Solution**:
    - **Infrastructure Upgrades**: Replacing outdated pipes and water delivery systems to reduce water loss and improve delivery efficiency.
    - **Conservation Practices**: Promoting water-saving practices across all sectors, including residential, business, agriculture, and industry. This includes measures like low-flow fixtures, drought-tolerant landscaping, and optimized irrigation.

    - **Water Reuse**: Expanding the use of treated wastewater for non-potable purposes such as irrigation, industrial cooling, and landscaping. This will significantly reduce the demand for fresh water.
    - **Policy Changes**: Updating municipal ordinances to promote water conservation and establish fair pricing structures that reflect the true value of water in a desert environment.

- **Involvement**: Phase 1 involves a wide range of stakeholders, including water companies, local governments, agricultural communities, mining, scientists, and consumers. Public-private collaboration will be critical to implement effective conservation programs and ensure long-term sustainability.

PHASE 2: Infrastructure and Technology Upgrades for Groundwater, Agriculture, and Storage

Goal: Invest in cutting-edge infrastructure and technologies to enhance water capture, storage, and distribution.

- **Problem**: Arizona's aging infrastructure needs substantial upgrades to cope with the state's expanding population and the growing demand for water. Furthermore, many existing water storage and irrigation technologies are outdated and inefficient.

- **Solution**:

    - **Groundwater Management**: Improving the management of Arizona's groundwater resources by investing in advanced aquifer recharge systems and enhanced well technologies.
    - **Agricultural Irrigation**: Updating irrigation systems with more efficient technologies such as drip irrigation and precision agriculture tools, which can drastically reduce water waste in farming operations.
    - **Water Storage**: Expanding water storage capacities to ensure the state can store water during wet years for use in dry years. This includes upgrading existing reservoirs and exploring new storage technologies.
    - **Price Adjustments**: Phase 2 will also involve implementing water pricing adjustments to reflect the actual cost of water in the desert, encouraging responsible use and incentivizing conservation.

- **Investment**: This phase will require billions of dollars in investment, with funding coming from both public and private sources. These upgrades will set the foundation for a more resilient and efficient water supply system.

PHASE 3: New Water Resources and Interstate/International Augmentation

Goal: Secure new water resources and establish mechanisms for moving water into Arizona to meet future demands.

- **Problem**: Arizona's water resources are finite, and to accommodate growth, the state must look beyond traditional sources for new water. This will involve exploring large-scale water augmentation projects that can move water from other regions, both within the U.S. and internationally.

- **Solution**:

    - **Water Transfers**: **Stantec**, a global leader in water engineering solutions, has identified five potential water augmentation strategies for Arizona:
        1. **Major Water Transfers from the U.S. West**: Projects like water swaps and desalination agreements, such as those with the Metropolitan Water District (MWD) and San Diego Desalination.
        2. **River Basin Transfers from the East**: Using pipelines and river transfers from major river systems like the Mississippi and Missouri Rivers.
        3. **Direct Transfers from the Upper Basin**: Re-balancing water storage between Lake Powell and Lake Mead to increase water availability.
        4. **River Basin Transfers from the Northwest/Canada**: Transferring water from the Columbia River Basin through California or Nevada.
        5. **International Transfers from the Sea of Cortez**: Exploring international agreements to bring water from Mexico via desalination or other methods.

- **Implementation**: Phase 3 requires complex, large-scale projects, including interstate agreements and international negotiations, to secure and transport additional water to Arizona. This phase will involve significant capital investment, including **Public-Private Partnerships (P3s)** and institutional investments from pension funds and sovereign wealth funds.

- **CABC's Role**: The CABC is especially interested in Phase 3, where its members, including major investors and stakeholders, can provide the financial and strategic support necessary to make these large-scale water augmentation projects a reality.

Key Players in Project Hourglass

CABC's Role: As a leader in fostering cross-border partnerships, CABC is uniquely positioned to facilitate the collaboration required in Project Hourglass. By bringing together government agencies, private industry, and international partners, CABC can help secure the necessary investments and agreements to support Arizona's water future.

Stantec's Expertise: With decades of experience in water engineering solutions, **Stantec** has evaluated over 80 potential water augmentation strategies and has developed the five key solutions outlined in Phase 3. Their expertise will be critical in the development of sustainable, innovative water solutions for Arizona.

Conclusion: The Urgency of Action

Project Hourglass is a critical initiative to secure Arizona's water future and ensure that the state can accommodate its growing population and industries. The three phases of the project—improving

efficiency and conservation, upgrading infrastructure and technology, and securing new water resources—are all interconnected and necessary for success.

The clock is ticking, and the need for action is urgent. Arizona's growth depends on its ability to address its water challenges head-on, leveraging both innovative technologies and bold, forward-thinking water augmentation solutions. By collaborating across sectors and borders, and through the expertise and investment of CABC's members, Arizona can secure the water it needs to thrive for generations to come.

Through **Project Hourglass**, Arizona can turn the tide on its water challenges, ensuring a sustainable, resilient water supply for its future.

PROJECT HOURGLASS

A WATER AUGMENTATION INITIATIVE
The future growth of Arizona is dependent on the future of water. Arizona is currently operating with antiquated 1940's water infrastructure. Project Hourglass is an initiative of cooperation, encouragement and support for the decision makers in the water conservation/augmentation arena in both the public and private sectors. The top of the hourglass is full of solutions waiting to trickle down to obtain the goal of "new water resources."

PROJECT HOURGLASS

PHASE 1 – How to create better efficiency, conservation and water reuse.

Estimates reveal that about 35% of existing potable water supply is lost due to: aging infrastructure, water evaporation, and outdated municipal ordinances. There is a need to update infrastructure and ordinances, while establishing monetary values for water usage in the desert. There are many entities involved in this phase: water companies, cities, counties, businesses, mining, agriculture/farmers, scientists and consumers.

PHASE 2 – Updating infrastructure and technologies for groundwater, agriculture, capture and storage.

This phase requires substantial infrastructure updates and with the technologies already in place the goal of water-use efficiency is imminently achievable. The "yet-to-be-developed" irrigation technologies will also be much more efficient. All of Arizona water users will begin to see a price adjustment for water use. Groups are in place working on phase two's solutions and are yielding multiple billions of investment dollars.

PHASE 3 – Finding new water and moving it through interstate and international augmentation. If Arizona chooses to grow, 1 million additional acre-feet will be assumed with an approximate 20-year build out. CABC is interested in Phase Three-the movement of water into the state via any of the five viable recommendations from CABC's member, Stantec.

Stantec is one of the most highly qualified engineering companies with an expertise and decades of experience in evaluating and engineering water solutions in global regions similar to the arid climate of the Arizona Sonoran Desert. The company has recommended the following five water augmentation solutions for Arizona, after considering and evaluating over 80 ideas. (Stantec is a global engineering leader with 26,000 employees and 400 locations across six continents.)

Major Water Transfers in the US West

1. SW Desalination and In-Lieu [West Vector]
   Deal with MWD – signed 2021

   Water swaps from Federal Facilities

   Rethink DCP Criteria

San Diego Desalination

2. River Basin Transfers from the East [East Vector]
   I-80 Pipeline Concept

   Mississippi / Missouri River transfers

3. Direct Transfer from UT/NV/MX/Upper Basin [North Vector]
   Re-balancing Lake Powell / Lake Mead

4. River Basin Transfers from the NW /Canada [North Vector]
   Columbia to and via CA or UT/NV

5. International Transfers from the Sea of Cortez [South Vector]
6. Many other concepts over past 100 years

CABC is highly interested in the discussions due to the direct investment its membership has in Arizona. Large scale water augmentation, as forward thinking as the Carl Hayden and the Central Arizona Project was, will require massive capital commitment of P3's (public private partnerships) and institutional investment from pension and sovereign wealth funds. The hourglass has been turned over and time is of the essence for decision making, financial resourcing and implementation.