GRSG Newsletter

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Winter Games Resilience Concerns in SLC 2034

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Expected Water Usage	Artificial Snow Dependence	Transit Expansion
~294 million gallons (1 day's drinking water for 900 million people)	~10–20% (Salt Lake City 2034 estimate) (Beijing 2022: ~100%)	Approximately 96 miles of new or enhanced transit routes miles planned

This issue explores how Salt Lake City's 2034 Winter Olympics could become a model for climate resilience.

🏔️ Snow, Ice, and... Water?

Why Local Climate and Water Resources Matter for the Winter Olympics

Every four years, when the Winter Olympics roll around, many of us are glued to our screens, cheering on skiers, snowboarders, and skaters as they perform on snow-covered landscapes. In 2034, those of us in Salt Lake City may have the opportunity to experience this excitement firsthand. However, it might surprise some to learn that behind the thrill lies significant sustainability considerations, especially as winter conditions become more unpredictable.

Snow is the foundation of the Winter Olympics, but natural snowfall can no longer be taken for granted. Since the 1960s, Olympic hosts have increasingly relied on artificial snow to make up for inconsistent or insufficient snowpack. Some regions, like Sochi in 2014 and Beijing in 2022, lacked sufficient natural snow or appropriate weather conditions—prompting large-scale engineering efforts and raising questions about the long-term sustainability of hosting winter games under changing climate patterns. By the 2022 Beijing Olympics, nearly 100% of the snow was manufactured—requiring around 49 million gallons of water. Snowmaking isn't just water-intensive— it's energy-intensive too, often powered by electricity from fossil fuels unless specifically offset or sourced renewably.

These demands put strain on local power systems, particularly in areas like Western North America where water and energy systems are deeply intertwined. In dry years, the same snowpack used for recreation is also needed for hydropower generation and drinking water—meaning Olympic-scale snowmaking could divert critical resources from already-stressed systems.

A 2022 study from the University of Waterloo concluded that, under high-emissions scenarios, only one of the 21 previous Winter Olympic host cities would be cold enough to reliably host the Games by 2080. This chilling (pun intended) forecast demonstrates the need to reassess which locations remain viable for winter competitions and what sustainability standards should be required.

As Olympic organizers and host cities look to the future, climate viability and water resource availability are increasingly non-negotiable. The conversation is no longer just about the thrill of competition—it's about how to stage that competition in a way that is responsible, resilient, and in harmony with the local environment and power and water systems

♻️ SLC Goes for Green: Preparing for 2034

Sustainable Practices Ahead of Salt Lake City's Winter Olympics

At the 2002 Olympic Winter Games, the Salt Lake Organizing Committee (SLOC) calculated all the potential energy used and emissions associated with staging the Games and created the *Olympic Cleaner*

and Greener program. Alongside its partners, the program went on to remove more than 240,000 tons of pollutants from Utah, the United States, and Canada. Part of the carbon emissions from the Olympic Winter Games were offset, 85% of Olympics-related waste was recycled or composted, and 100,000 trees were planted in the state of Utah.

The Organizing Committee used existing sporting and business infrastructures in Salt Lake City to host the Games whenever possible and worked to utilize energy-efficient and environmentally friendly materials for needed new buildings. The 2002 games also motivated innovations in Utah's public transit system. The city's TRAX was built with Games-related travel in mind, which is an environmentally friendly form of travel that Salt Lake City has enjoyed over the last 20+ years.

Salt Lake City should seek to continue to grow and expand on these environmentally friendly achievements and practices from the 2002 Games. The current plan for the 2034 Winter Games is being called *new-build free*, and the International Olympic Committee (IOC) says the focus should be on partnering with stakeholders to "accelerate climate action." These specific plans can be seen in the commission report, which seeks to improve carbon emission offsetting, building retrofitting, and water conservation.[1]

The Organizing Committee for the Olympic Games (OCOG) expects to partner with the city to remove more carbon from the atmosphere than the Winter Games will emit. The city also plans to expand the FrontRunner and TRAX, and to improve and expand on pedestrian travel in the city. The OCOG plans to partner with groups already active in the area (such as Wasatch Resource Recovery) and utilize the knowledge of key players involved in creating sustainability for the 200 Winter Games.

These planned improvements align with the city's overall environmental and climate goals, as seen in the Climate Positive by 2040 plan. Carbon offsetting, sustainable travel, energy-efficient buildings, improved air quality, and sustainable waste resolution are key objectives in this plan. Done right, the 2034 Olympic Winter Games could help accelerate these goals and not set them back.

👥 From Campus to Community: Climate Action Around the Olympics

Student-Led and Local Initiatives Making an Impact

In early 2025, the Wilkes Center for Climate Science & Policy hosted a climate and water resources hackathon that brought together students from the University of Utah and CY Cergy Paris University to tackle Olympic-related sustainability challenges. Events like this show how students are already helping shape the conversation around Salt Lake's 2034 Games.

But there are many ways to get involved beyond one event. Students can contribute to faculty-led research on snowmaking, energy systems, and regional water use, advocate for sustainable development through local city council meetings, or engage directly with policymakers on water and climate legislation. Whether it's through policy, science, or public education, community voices—especially from younger generations—have a real opportunity to influence how these Games impact our future.

⚠️ Learning from Beijing: A Warning from 2022

Why SLC Is Planning Differently After the 'Cautionary Tale'

The Beijing 2022 Winter Olympics marked a pivotal moment in the conversation around climate and sports. Branded by many as a "*cautionary climate tale*," the Games leaned almost entirely on artificial snow—using **49 million gallons of chemically treated water** in a water-scarce region. Protected areas were **cleared**, and the Games consumed 4**00 GWh of electricity**, with **natural gas still powering 34%** of the grid. Despite claims of carbon neutrality, critics have called this blend of messaging and reality a form of **greenwashing**, especially in the absence of third-party verification.

As people passionate about sustainability and infrastructure, we see Beijing 2022 as a wake-up call and a valuable learning moment. It exposed the fragility of winter sports in a changing climate and pushed the global community to **rethink how these events are planned**. *That's where Salt Lake City's approach gives some hope.*

SLC, preparing to host the 2034 Winter Olympics, is taking a refreshingly grounded and climate-aware path. The **Brendle Group** conducted a Carbon Impact

[1] https://www.olympics.com/ioc/olympic-games/salt-lake-city-utah-2034-communities

Assessment to guide strategies, including **reusing 2002 Olympic venues**, electrifying transport, improving waste systems, and adding renewable energy to the grid. SLC's sustainability strategy is built around three pillars:

- **Reduce** emissions (targeting a 70% reduction by 2034),
- **Compensate** through verified carbon removal, and
- **Influence** global practices by showcasing sustainable innovation.

What excites me most is Utah's development of the first U.S. battery-electric passenger train, funded in June 2024. A partnership between **ASPIRE, Stadler Rail**, and the state, the train will begin testing in **Fall 2025** and could replace **FrontRunner** diesel engines in time for the Games. It's not just about putting on a show—it's about setting a precedent.

"SLC's strategy could redefine how global sporting events are hosted in the age of climate urgency. And if they succeed, we might finally have a blueprint for winter games that don't come at the environment's expense." — Sarah Khan

🌊 The Great Salt Lake: A Local Legacy or Liability?

Why This Iconic Body of Water Is Critical for Hosting the Winter Games

The **Great Salt Lake** is more than a landmark—it's a key environmental and visual element for the 2034 Winter Olympics. Once the largest saltwater lake in the Western Hemisphere, it has now **dropped to historic lows**, with the southern arm at **4,192.5 feet** and the north at **4,189.5 feet**—well below the **healthy target of 4,198–4,205 feet**. The last time it reached that range? **2002**, the year Salt Lake City last hosted the Winter Games.

The Great Salt Lake Strike Team, a joint effort by the University of Utah and Utah State University, says the Olympics provide a 10-year window to restore the lake—if Utah pursues ambitious conservation efforts. That means cutting 1.3 million acre-feet of water use annually in dry years from agriculture, industry, and households. It's a tall order—but a globally visible opportunity.

Why does this matter for the Winter Olympics?

❄️ *Snowpack and Ski Viability*

The lake-effect snow that makes Utah's ski slopes world-renowned depends on the lake's moisture. A shrinking lake threatens snowpack consistency—critical for Olympic competition and tourism. A healthy lake is a healthy Games.

🫁 *Air Quality Risks*

As the lake recedes, exposed lakebed dust—containing arsenic and heavy metals—is carried into Salt Lake City during windstorms. These particles **worsen air quality** during winter inversions, directly affecting athlete and spectator health.

🌿 *Ecological and Cultural Significance*

Home to millions of migratory birds and central to local Indigenous traditions, the lake's decline threatens biodiversity and cultural heritage. A responsible Games must protect—not overlook—this natural treasure.

As **Bill Anderegg**, director of the **Wilkes Center for Climate Science**, puts it:

"We have this 10-year window to show the world how to conserve water and manage a terminal lake."

From **railroad causeway restoration** to **policy innovation** and a renewed **statewide conservation push**, Utah has the tools—and the eyes of the world upon it.

❓ Questions to Ponder:

How do we ensure sustainability efforts go beyond symbolic gestures and result in measurable impact?

How much are we willing to change—agriculturally, politically, and culturally—to restore a vital ecosystem?

For further reading:

Snow & Climate Change – Olympic Games
olympics.com/snow-climate

Beijing 2022: No Natural Snow – Q&A
theconversation.com/beijing-2022-qa

From Adversity to Success – Olympic Values
olympics.com/adversity-success

SLC 2034 Transit Plans
olympics.utah.edu/getting-around

SLC 2034 and Community Impact
olympics.com/slc2034-communities

SLC 2034 Host Commission Report
olympics.utah.edu/host-report

Infrastructure Boom Before 2034 Olympics
kutv.com/2034-construction

Official SLC 2034 Host Questionnaire (PDF)
olympics.com/slc2034-questionnaire

Beijing 2022's Unsustainable Snowmaking
brocku.ca/beijing-fake-snow