

## Pool Efficiency

### Introduction

Pool energy and water efficiency are essential considerations for building owners, offering opportunities for cost savings and optimized performance. Implementing energy-saving practices can help achieve certification goals, reduce operational expenses, and minimize water waste. These measures can also support resource conservation, align with broader organizational goals, and promote responsible long-term ownership.

### Technical Solutions

Explore technical solutions and resources designed to improve pool energy and water efficiency, offering practical tools, guidelines, and innovations for sustainable pool management.

- ▶ [Swimming Pool Covers](#): Swimming pools lose energy in a variety of ways, but evaporation is by far the largest source of energy loss due to increased space dehumidification load (indoor pools) and increased pool water heat requirements. Pool covers can reduce evaporation, minimize water loss, and save 50-70% of pool heating costs. Examples of pool cover implementation:
  - [Sacramento County Pool Cover Guidelines for Public Pools](#) (May 2016)
  - [San Bernardino County Guidelines for Use of Pool Covers on Public Pools](#) (May 2016)
- ▶ [Managing Swimming Pool Temperatures](#): Keeping pool temperatures at the lower end of the recommended range (78°F to 82°F) coincides with energy costs.
- ▶ [Choosing, Installing, and Operating an Efficient Pump](#): Installing an accurately sized pump and reducing filtration time can result in significant energy savings.
- ▶ [Heat Pump Swimming Heaters](#): Using heat pumps instead of boilers for swimming pool heating is more efficient. Air-source heat pumps with warm outside air are especially efficient.
- ▶ [Solar Heaters](#): Cost competitive with both gas and heat pump pool heaters, solar pool heaters have a low annual operating cost.
- ▶ Additional considerations for energy and water efficiency:
  - [LED lighting](#)
  - [Wastewater reuse through reverse osmosis](#) (see page 7-8)

### Partner Highlights

Partners across the commercial sector contributed valuable insights gleaned from their experiences with pool efficiency practices. Learn more about partner achievements and challenges in the solutions below:

- ▶ [Columbia Association](#): Columbia Association (CA) in Maryland upgraded Kendall Ridge Pool's water heating system, replacing a 65-gallon propane heater with two 50-gallon hybrid units. This shift, costing \$5,000 for plumbing and electrical work, significantly reduced onsite fuel use. The change enhanced the hot water supply for the bathhouse, showers, and lavatories during the pool's summer season. Despite operating seasonally, CA sees value in cutting emissions and plans similar upgrades in other facilities. The new heat pumps, powered by bundled wind energy credits, contribute to emissions reduction. Future plans involve replacing a propane spa heater with a heat pump, aiming to entirely eliminate fuel use at Kendall Ridge Pool. Read the full solution [here](#).

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- ▶ [Life Time, Inc.](#): At Life Time Chanhassen Athletic Club, enacted stringent validation of pool pump variable frequency drives (VFDs) on an annual basis, ensuring optimal performance while minimizing energy consumption. Upgraded controls in the steam rooms were implemented, contributing to more efficient and regulated energy use in these areas. Moreover, monitoring domestic and pool water systems in real-time is aimed at promptly identifying and rectifying leaks or autofill issues, minimizing water wastage. These targeted initiatives within the pool infrastructure mirrored the broader commitment of the club to implement sustainable practices across its facilities, fostering both environmental responsibility and operational efficiency. Read the full solution [here](#).
  - ▶ [Hilton](#): The Hilton Columbus Downtown, a 532-room hotel, surpassed energy efficiency standards by 32% compared to ASHRAE 90.1-2007 through robust energy conservation measures. These initiatives, including advanced lighting installations and innovative technologies like variable frequency drives and an energy recovery chiller, resulted in a 32% reduction in annual energy consumption and \$387,000 in annual energy cost savings. Notably, the hotel's pool employs an energy reclamation system to heat the swimming pool, reducing reliance on conventional heating methods. The building is LEED NC Gold certified and enabled water-saving measures that are set to save around 1,000,000 gallons annually. Read the full solution [here](#).

## Conclusion

Efficiently managing pool operations can be achieved through various tools and strategies. Prioritizing pool energy and water efficiency in indoor and outdoor facilities can lead to:

- ▶ **Energy and Water Waste Reduction:** Minimizing energy consumption and water waste in pools contributes to efficiency targets.
- ▶ **Technological Solutions:** Strategic technologies in heating and cooling and other equipment foster energy efficiency and optimize water usage in facility management.
- ▶ **Cost Savings:** Utilizing energy-efficient pumps, heaters (ideally heat pump technology and energy recovery), and LED lighting significantly reduces operational costs, while incorporating water-saving measures such as covers to prevent evaporation and efficient filtration systems minimizes water usage, resulting in substantial savings for pool owners.