

**To:** Town Council.

**From:** Magnus Thorsson, Chair Resilience & Energy Committee.

**Subject:** Supplemental information all-electric buildings & net zero schools.

Net-zero buildings offer significant benefits by producing as much energy as they consume, leading to reduced greenhouse gas emissions, lower energy costs, and increased energy independence. These sustainable structures enhance indoor air quality, promote occupant health, and comfort, and contribute to a more resilient and environmentally responsible future while serving as models for sustainable construction practices.

Overall, the financial benefits and cost savings over the life of a net-zero public building outweigh the initial construction costs, making it a financially sound and environmentally responsible choice.

Legislative actions were identified as the top barrier to adoption followed by economic and professional/technical barriers. The top-ranked specific barriers were insufficient regulations, policy, and implementation efforts and uncertain long-term economic returns/payback periods.

Ohene, E., Chan, A. P., & Darko, A. (2022). Prioritizing barriers and developing mitigation strategies toward net-zero carbon building sector. *Building and Environment*, 109437.

### **10 facts about all-electric new buildings. Rewire America. 11/03/2023**

[https://assets.ctfassets.net/v4qx5q5o44nj/2k9IELCFAnrkogRXkrfT3A/84b67d17e73b0e04da2bfffac1d6ab61a/10\\_Facts\\_About\\_All-Electric\\_Buildings\\_New\\_York\\_-Rewiring\\_America.pdf](https://assets.ctfassets.net/v4qx5q5o44nj/2k9IELCFAnrkogRXkrfT3A/84b67d17e73b0e04da2bfffac1d6ab61a/10_Facts_About_All-Electric_Buildings_New_York_-Rewiring_America.pdf)

All-electric buildings offer better indoor air quality, and increased efficiency with heat pumps. They provide resilience with backup power, align with sustainability goals, and support local clean energy. They reduce costs, comply with electric-friendly regulations, and may boost property value, making them an attractive choice for environmentally conscious individuals.

### **Building electrification: Why it matters. 07/29/22**

<https://www.usgbc.org/articles/building-electrification-why-it-matters>

The article stresses building electrification's importance for sustainability, focusing on its advantages over gas systems like emissions reduction, better air quality, and increased energy efficiency. It also addresses electrification's role in combatting climate change and promoting healthier environments, emphasizing local factors and regulations' relevance. A holistic approach is recommended to maximize its positive impact on the environment and health.

**Better Buildings U.S. Department of Energy. 11/03/23**

<https://betterbuildingssolutioncenter.energy.gov/accelerators/zero-energy-schools>

Net-zero energy in schools include significant savings energy bills, enhanced indoor air quality and comfort for students and staff, reduced greenhouse gas emissions, and improved educational experiences. Net-zero energy schools align with broader sustainability goals and demonstrate leadership in the transition to cleaner and more efficient building practices.

**A Guide to Zero Energy and Zero Energy Ready K-12 Schools. 11/03/23**

[https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/NREL\\_Z\\_E\\_K12\\_Study.pdf](https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/NREL_Z_E_K12_Study.pdf)

According to the NREL net-zero energy schools provide numerous advantages. These include significantly reduced energy costs, improved indoor air quality, better learning environments, and the potential to serve as models of sustainability. Additionally, they can reduce greenhouse gas emissions, contribute to local job creation, and promote the adoption of energy-efficient and environmentally responsible practices.

**The Financial Case for Net-Zero Energy Schools. 11/05/23**

<https://www.cjnrc.org/wp-content/uploads/2022/02/The-Financial-Case-for-Net-Zero-Energy-Schools-FINAL.pdf>

Districts pursuing net-zero will save 20-25% over a 30-year life cycle based on increased energy and maintenance costs alone.

The report highlights the financial case for net-zero energy schools, emphasizing that while the initial construction costs may be slightly higher, the long-term benefits, including reduced energy expenses, increased property value, and potential revenue generation through excess energy production, far outweigh the upfront investments. Additionally, net-zero energy schools provide healthier and more comfortable learning environments, improve student performance, and align with sustainability goals, making them a cost-effective and wise choice for both school districts and their communities.