Risks and Rewards in the ZNE Marketplace

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Contributing Factors

Lessons learned from Innovators and Early Adopters

**Strengthened energy codes (esp. Title 24) have raised the baseline**
- Improved insulation
- Air barriers required
- Improved glazing
- Reduced lighting power density
- Advanced lighting controls with LEDs
- Occupancy sensors at workstations
- Many mechanical strategies no longer optional

**Low Photovoltaic (PV) Prices + Power Purchase Agreements**
- $8.50/watt in 2008 vs. $3.50/watt today

**Leveraging leasing structures & “soft” factors**
Key Design Features
1. Design for daylighting
2. Restrained window-to-wall ratio
3. Triple-element fiberglass windows
4. Low thermal bridging
5. Efficient VRF HVAC system
6. Building-Integrated Photovoltaics

Building-Integrated Photovoltaics
Accounts for 31% of renewable energy supply
Vertical array is 75% as efficient as horizontal
Replaces metal panel as building cladding