

Net-Zero Modern Family Farm



Project: Net-Zero Modern Family Farm
Type: Residential- Large
Square Feet: 8,810
Location: Boulder, Colorado
Architect: SSArchitects, PC
Stephen Sparn | Principal, AIA
Josie Varga | Senior Architect
Michael deLeon | Architectural Designer
Builder: Beck Building Company
Expected Completion Date: Spring, 2015

SSArchitects, PC is a team of Boulder architects that has delivered innovative planning and design solutions for more than 30 years. Our diverse portfolio includes renovations, custom homes, multi-family projects, mixed use urban in-fill projects, commercial, retail and land use planning. Our work is unified by the integration of client values, commitment to quality design, sound construction and a longstanding commitment to sustainable design principles.



Contact:

Stephen Sparn, AIA

ssparn@sparn.com | 303.442.4422 x 205

1731 15th Street, Suite 250

Boulder, Colorado

80302





Net-Zero Modern Family Farm

Nestled in the shadow of Boulder, Colorado lies a fertile 20 acre parcel of farmland. What was once a sleepy, vacant lot has now become the scene for a modern residence with a big environmental conscience. For this project, the client's directive to the architects was to design a home that could stand on its own environmentally, while also giving them the functionality and security they needed as a family. The plan orients living spaces to the south and west in order to capitalize on views, sun and breeze. In order to achieve the client's net-zero energy goals, SSArchitects had to be innovative with the overall design and planning in order to incorporate the multiple green-building technologies necessary to sustain such a sizeable home. The results demonstrate unparalleled energy-conservation systems that both preserve and generate energy simultaneously. These systems include:

- Grid-tied photovoltaic panels reduce the electrical loads throughout the home and ensure mechanical systems align with output of solar generation systems.
- A vertical axis wind turbine.
- Geothermal heating and cooling system.
- Expansive south-facing, high performance, triple glazed windows that passively allow solar energy to flood the living space.
- A super-insulated building envelope that allows the home to actively retain and conserve the energy generated in the active and passive systems.
- Heat Recovery Ventilators continuously bring in fresh air while extracting energy from exhausted, stale air.
- Long-standing LED lighting managed by a low-voltage home automation system and integrated throughout the house.
- Recycled construction materials (ex. FSC-Certified engineered wood flooring).
- Non-toxic, environmentally safe finishes.

Together these technologies have engineered a net-zero residence with a HERS index (home energy rating system) of minus 29, the lowest ever on record in Boulder County, Colorado. According to Boulder County sustainability experts, this means the home produces 29% more energy than it uses, a substantial achievement for an 11,309 square foot home. Long-term plans for the property include leasing land to a sustainable farm operation, incorporating a greenhouse, and building a multi-use barn.

Grid-tied photovoltaic panels. Electrical loads are reduced throughout the building and mechanical systems to align with the output of the solar generation systems.

South-facing, high performance triple glazed windows to passively emit solar energy into the living space

Geothermal system. Geothermal pipes pre-heat or cool fresh air underground

Vertical axis wind turbine tied to grid

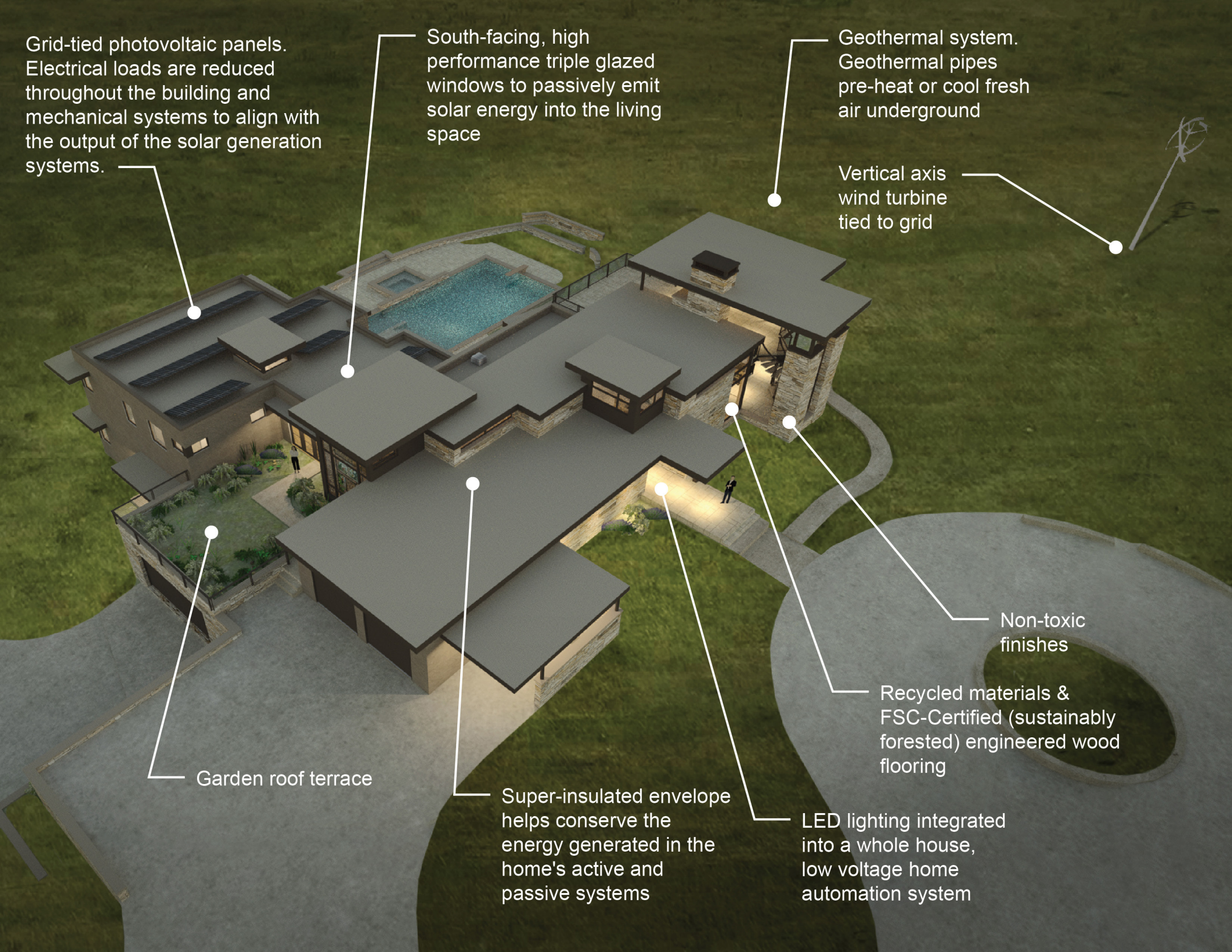
Garden roof terrace

Super-insulated envelope helps conserve the energy generated in the home's active and passive systems

LED lighting integrated into a whole house, low voltage home automation system

Non-toxic finishes

Recycled materials & FSC-Certified (sustainably forested) engineered wood flooring





South Elevation- Main Entrance



North Elevation



Current Progress - May 2014