

Kappe+Du Architects, Design and LEED Consultant
Guttman & Blaevoet, LEED and Consulting Engineers

Municipal Service Centers, Case Study

Project: Town of Truckee Public Service Center



Public Service Center Grand Opening Ceremony

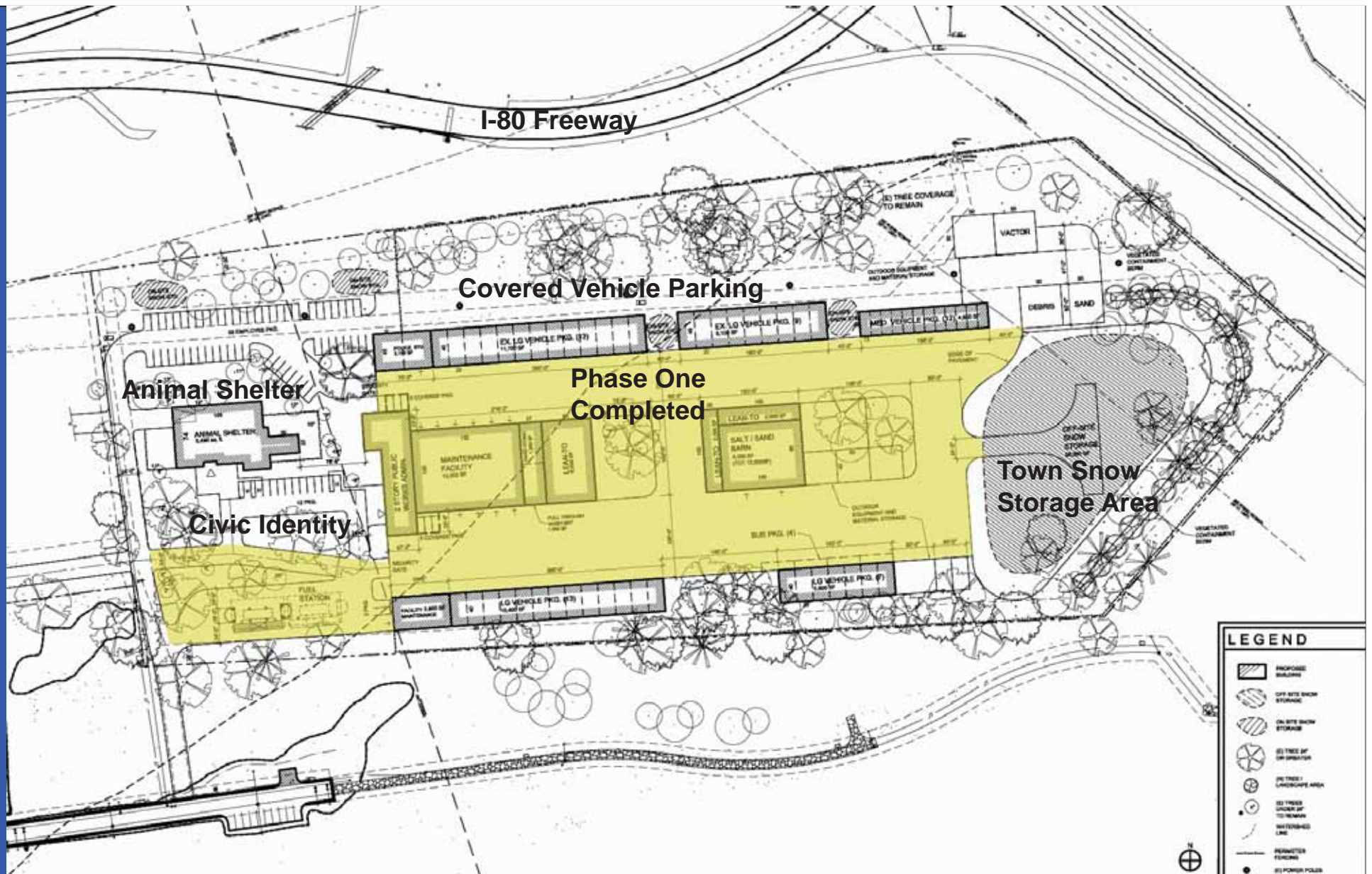
Working with the community

- Truckee Programming and Visioning Session
- Create Understanding of Difficult Decisions
- Prioritized the user wish list
- Establish LEED goals
- Adjusting spreadsheet in real time to study effects of decisions
- Develop Consensus & Buy-in



Participation in the Design Process





16-acre Truckee Service Center Masterplan- Phased Development



Sketchup Models for Public Presentation

Budget: \$15M Service Center, \$4 M Animal Shelter

- 9-building civic campus totaling 95,000 SF
- 2-Story Administration Building
- 10-Bay Large Vehicle Garage,
- Industrial Wash Bay, Salt Sand Barn
- Police Evidence Storage,
- Large Vehicle Covered Parking, Shop Buildings
- LEED Silver Goal for Administration, Animal Shelter

Town of Truckee Public Service Center



New Site- Existing site trees were harvested by subcontractor at no cost to the Town



Existing Modular Corporation Yard Administration Building, below, existing maintenance facility



New Construction- Administration Building, custom wood framing; Maintenance Building, pre-engineered metal building



Town of Truckee Public Service Center-
Existing Conditions & During Construction



Key LEED Features, Administration Building:

- Narrow Floor Plate in North-South Orientation to allow daylight and views
- Natural Light and Operable windows
- Localized thermal and comfort controls
- Low VOC and sustainable interior materials
- Site light pollution reduction
- Water use reduction, water efficient landscape
- Recycled Content
- Regional Materials



Town of Truckee Public Service Center, Administration Building



Photovoltaic Panels,
Face-mounted and
Roof Mounted, provide
a 60 Kw System



Stainless steel grating
used as exterior sun
shading at south facing
windows

Town of Truckee Public Service Center

Melting snow and captured rainwater are conducted to and stored in above ground storage tanks at the wash bay and is used to flush out the wash bay pit



Town of Truckee Public Service Center Wash Bay & Rainwater Storage



Town of Truckee Public Service Center, Sand and Salt Barn

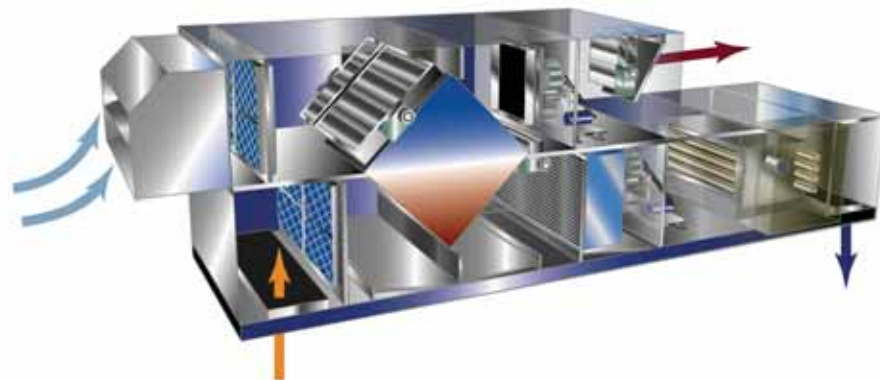


Town of Truckee Public Service Center

Targeting Energy Use Reduction

Multiple Climate Appropriate Strategies

- Water-cooled Variable Refrigerant Flow Air Conditioning
- Ground-source Heat Pump
- Dedicated Outdoor Air System with Heat Recovery
- Radiant Heating

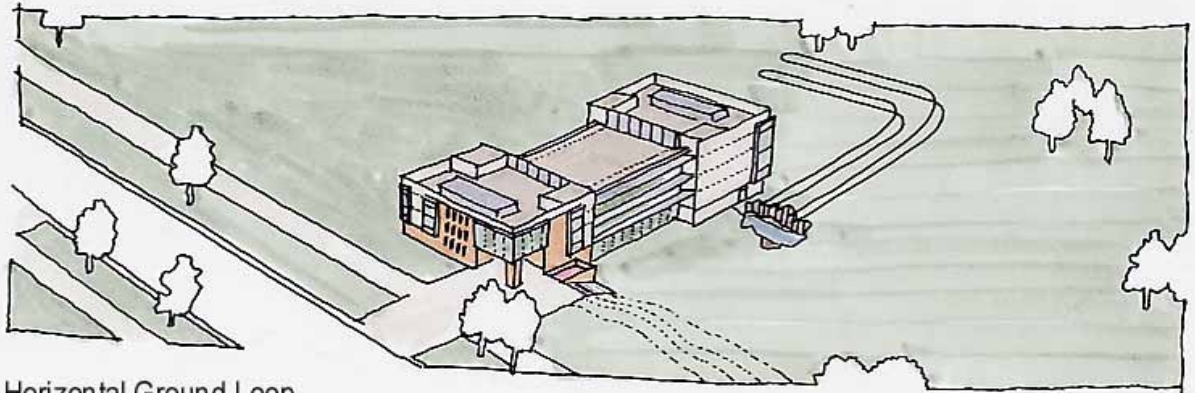


Ground-Source Heat Pump

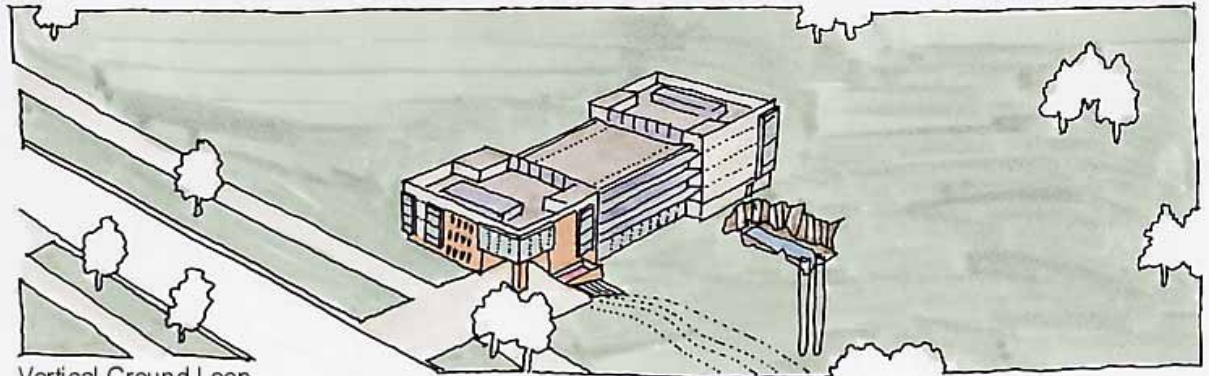
Targeting Energy Use Reduction

Multiple Configurations

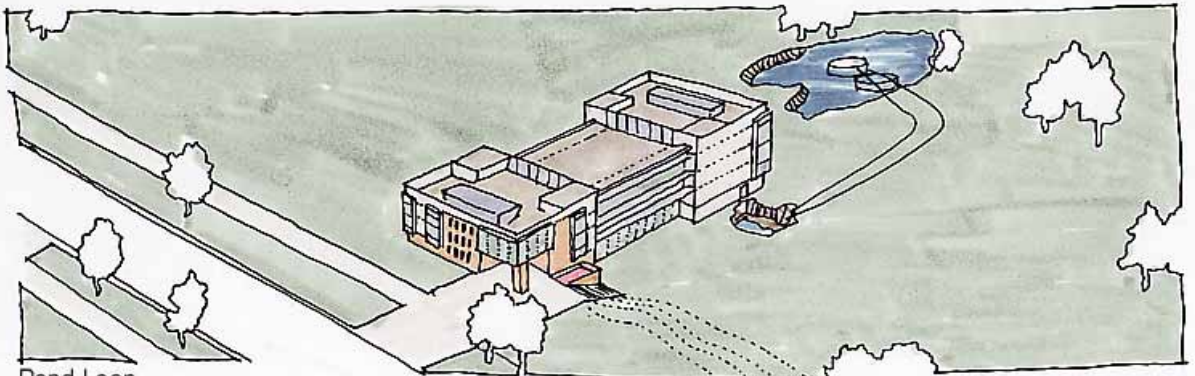
- Horizontal
- Vertical
- Pond
- Bay / Ocean



Horizontal Ground Loop



Vertical Ground Loop



Pond Loop

Ground-Source Heat Pump



Kelso Depot, Kelso, CA



Big Rock Ranch, Nicasio, CA



SMUD Corporation Yard, Sacramento, CA

Targeting Energy Use Reduction

ADVANTAGES

- 25-50 years vs. 15-20 years
- Less building space required
- As efficient as evaporative cooling without using any water
 - No cooling towers or vapor plumes
 - Less water usage compared to cooling towers
 - Less chemical discharges
- Eliminate use of propane and natural gas
- Electricity is a more sustainable resource than fossil fuels
- Less permanent site disturbance
- Less visual impact
- Less site noise disturbance
- Less site emissions

Targeting Energy Use Reduction

Multiple Climate
Appropriate
Strategies

Ground Source
Heat Pump
Efficiencies



Curry Village Employee Housing,
Yosemite National Park

% Below

Title 24

LucasFilm Big Rock Ranch

40%

Lassen National Volcanic Park

36%

Truckee Corporation Yard

35%

Yosemite Curry Village

31%

Walden Studios

29%

Kelso Depot

21%

Dedicated Outdoor Air System with Heat Recovery

Sensible Heat Exchanger

- 52% of cooling load
- 56% of heating load

Targeting Energy Use Reduction





Town of Truckee Public Service Center, 10-Bay Maintenance Garage

Radiant Heating

Gas-Fired Infrared Heaters

- Heats Surfaces
Not Air
- Greater Comfort
at Lower Air
Temperatures
- High
Combustion
Efficiency

Targeting Energy Use Reduction

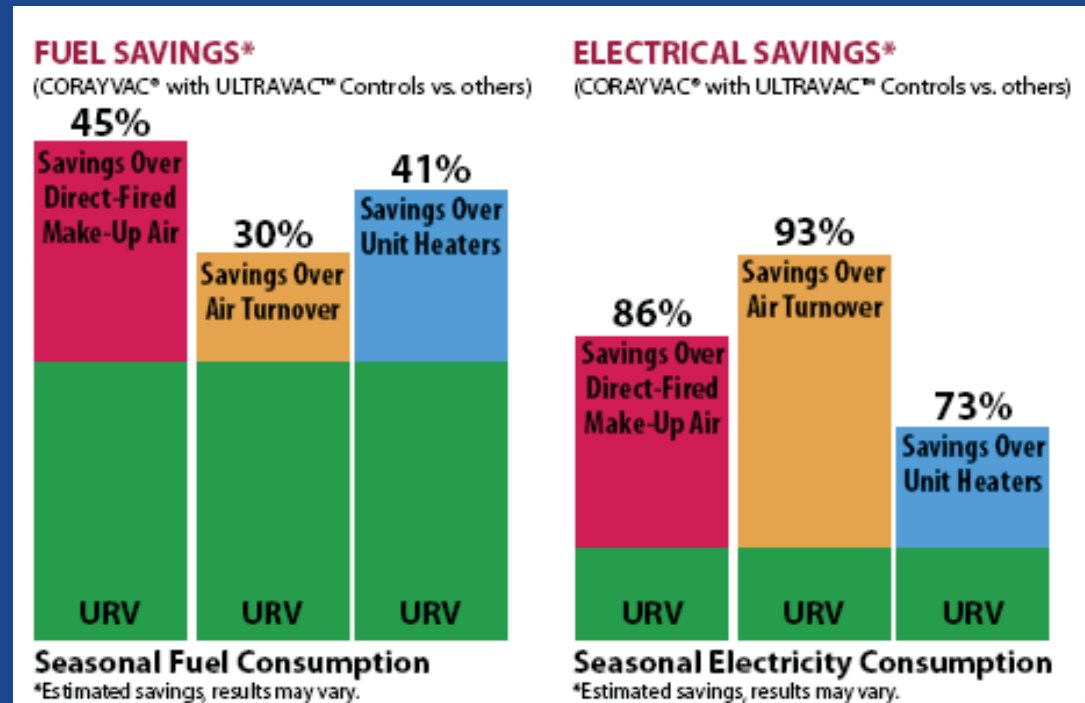


Radiant Heating

Gas-Fired Infrared Heaters

- Fuel Savings
- Electrical Savings

Targeting Energy Use Reduction

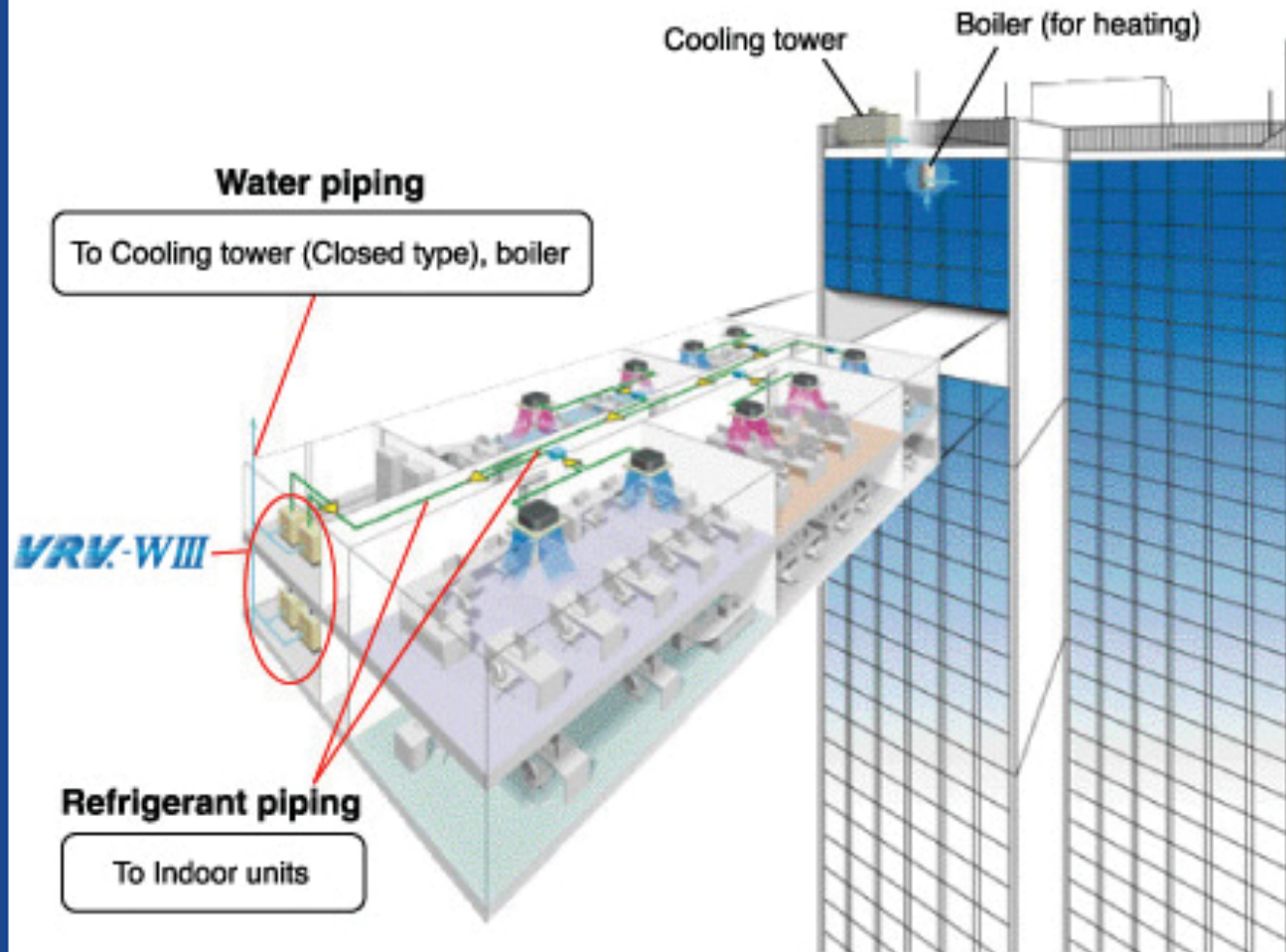


Water-Cooled VRF

Geo-exchange VRF Heat Pumps

- Unitary Heat Pump System
- Refrigerant Based
- Designed for Noise Sensitive Applications (hotels, schools, etc).
- Indoor Equipment
- Geofield Capable since 2009

Targeting Energy Use Reduction



Design Goals

- 10,000 SF Animal Resource Center
- Promote public visitation
- Encourage placement of animals
- Separate adoption & relinquish lobbies
- Separation of “Dirty” functions from “Clean” functions
- Administration separated from front lobby
- Provide “Real Life” rooms
- Education & Training Rooms
- Cat Porches

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ANIMAL ARTS
GATES HAFEN COCHRANE

Truckee Animal Care Facility



“Triple Dip” ACU

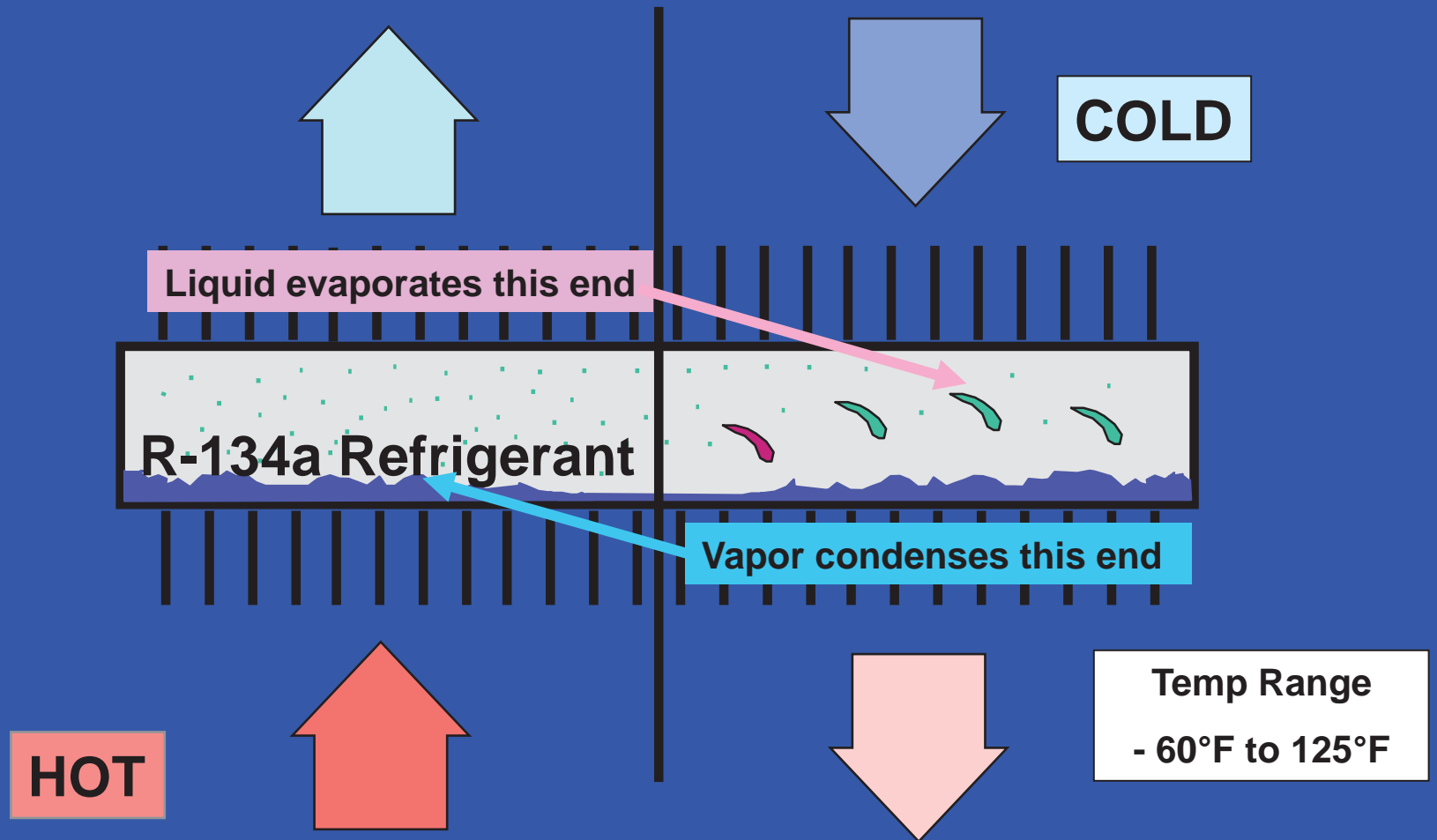
Animal Shelter Custom Heat Recovery Air Handler

- Sprayed “Heat Pipe” Heat Recovery Unit
- Direct Evaporative Cooler
- DX Cooling with Condenser in Exhaust Air Stream

Targeting Energy Use Reduction



Heat-Pipe Heat Exchanger



Town of Truckee Animal Shelter

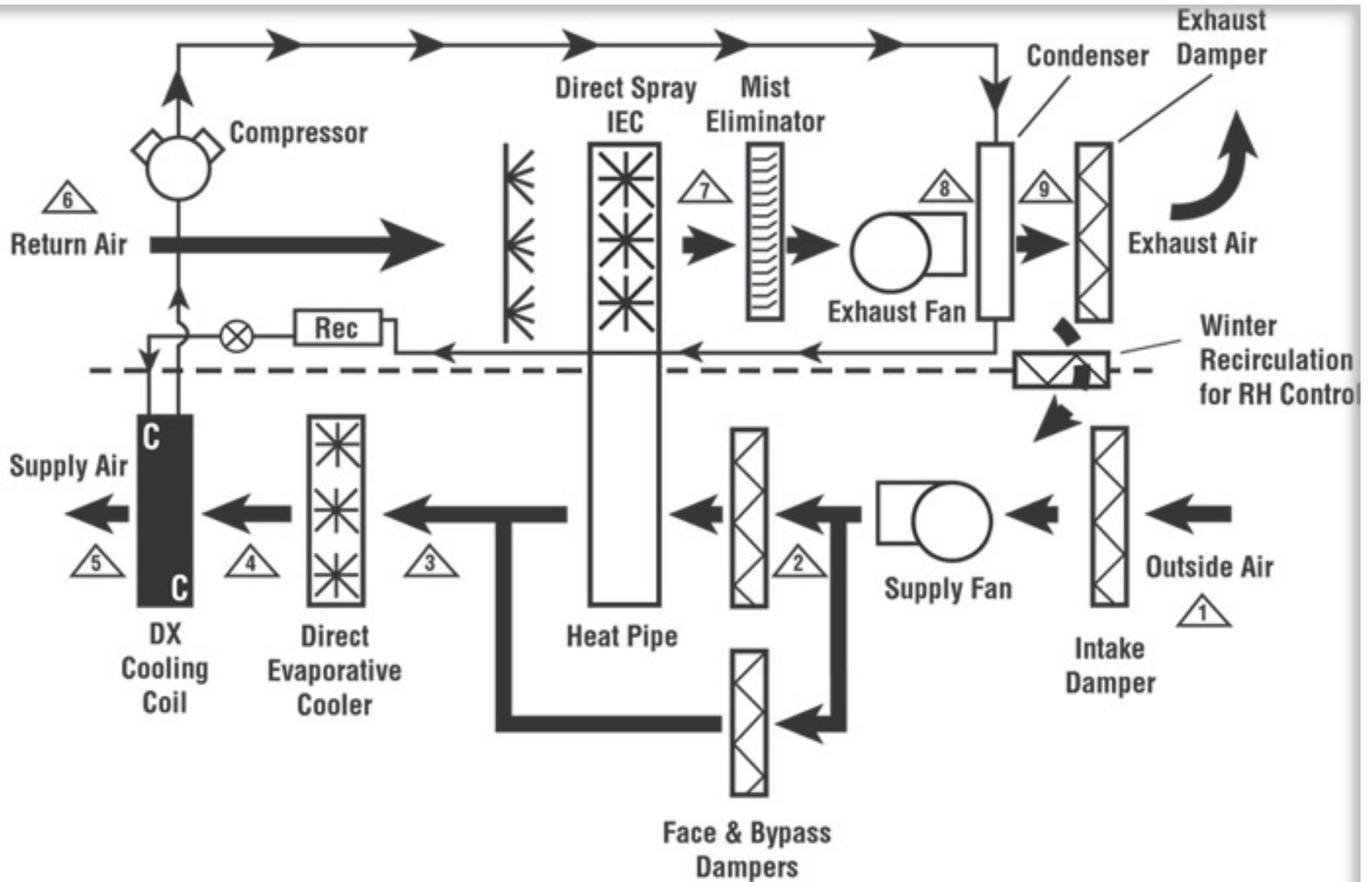


Figure 1

Town of Truckee Animal Shelter

Town of Truckee Public Service Center & Animal Shelter

Design & Construction Team

Kappe+Du Architects with Animal Arts, Animal Shelter Consultant

Guttman & Blaevoet, MEP, FP and IT Engineers

ZFA, Structural Engineer

Gary Davis Groups, Civil Engineer, local firm

LJM, Landscape Architect, local firm

Holdrege & Kull, Geotechnical Engineer, local firm

Lot C Architects and JLS Design, local architects

MI Architects, Fuel Station Design

J.C, Brennan Associates, Acoustical Engineer

Matthew Williams Design, Signage Consultant

Reeve-Knight Construction, General Contractor, Service Center

Richard Wagner, Construction Manager for Town of Truckee

Dan Wilkins, Director of Public Works, Town of Truckee

Jessica Thompson, Project manager, Town of Truckee