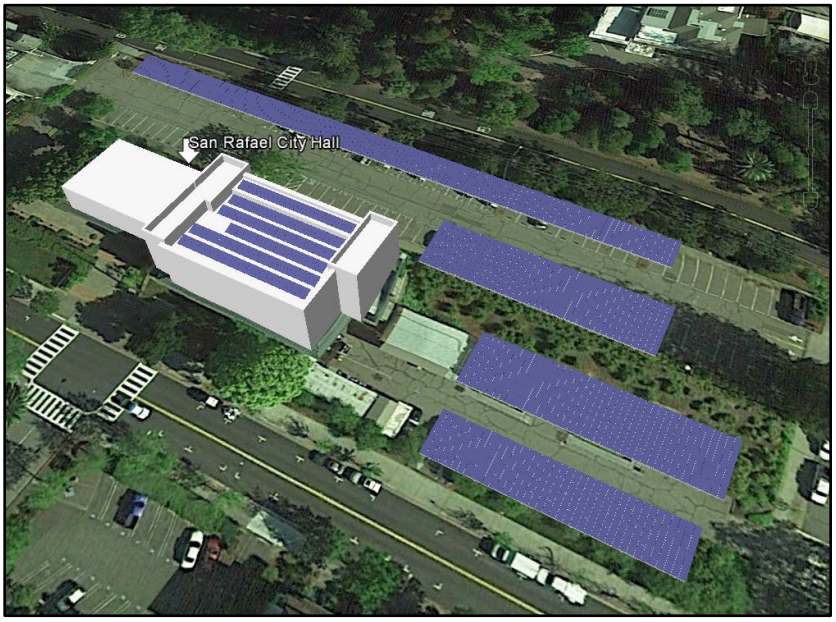
City of San Rafael Renewable Energy Projects

Proposed Site Concepts

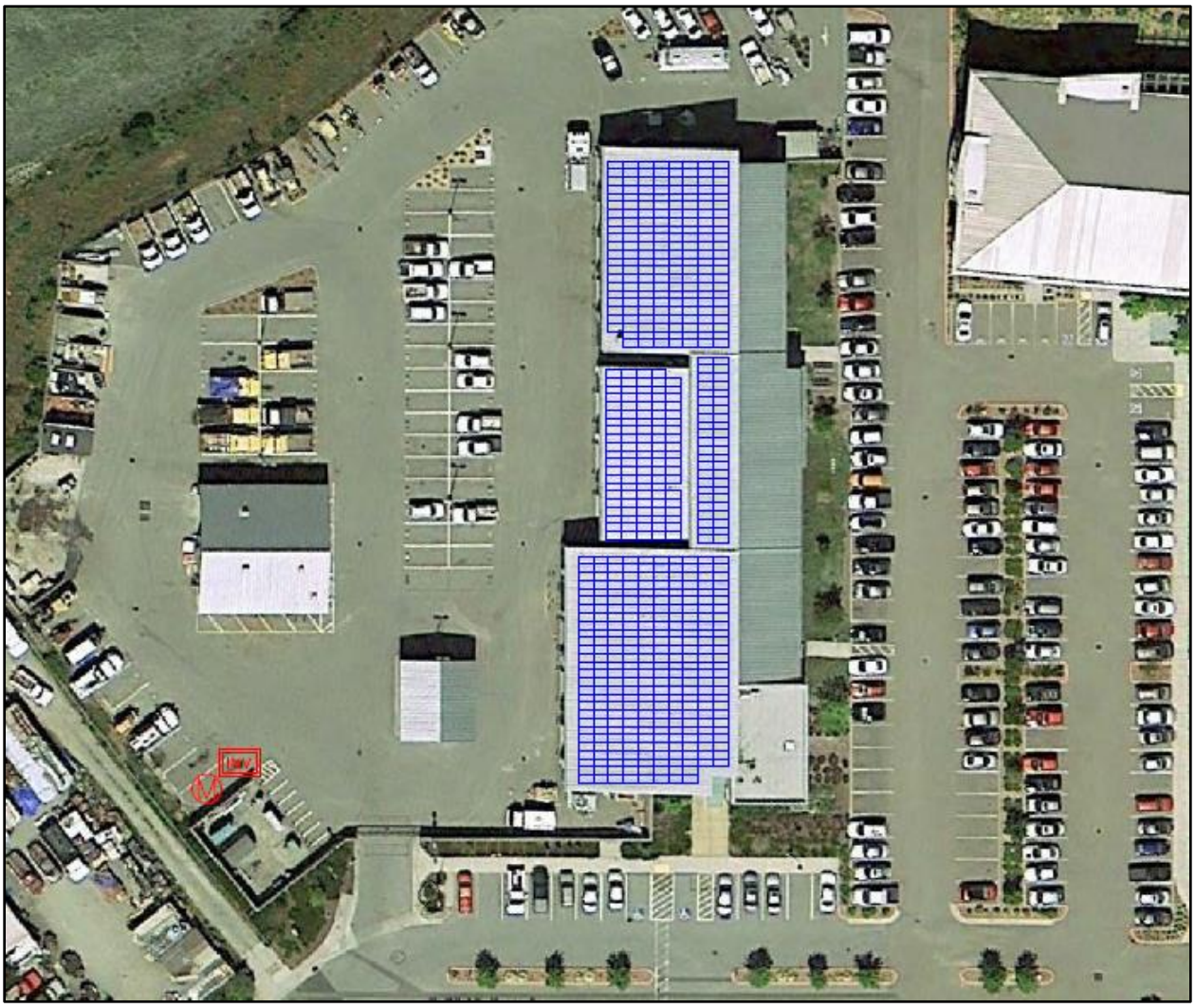
July 2014

CITY HALL



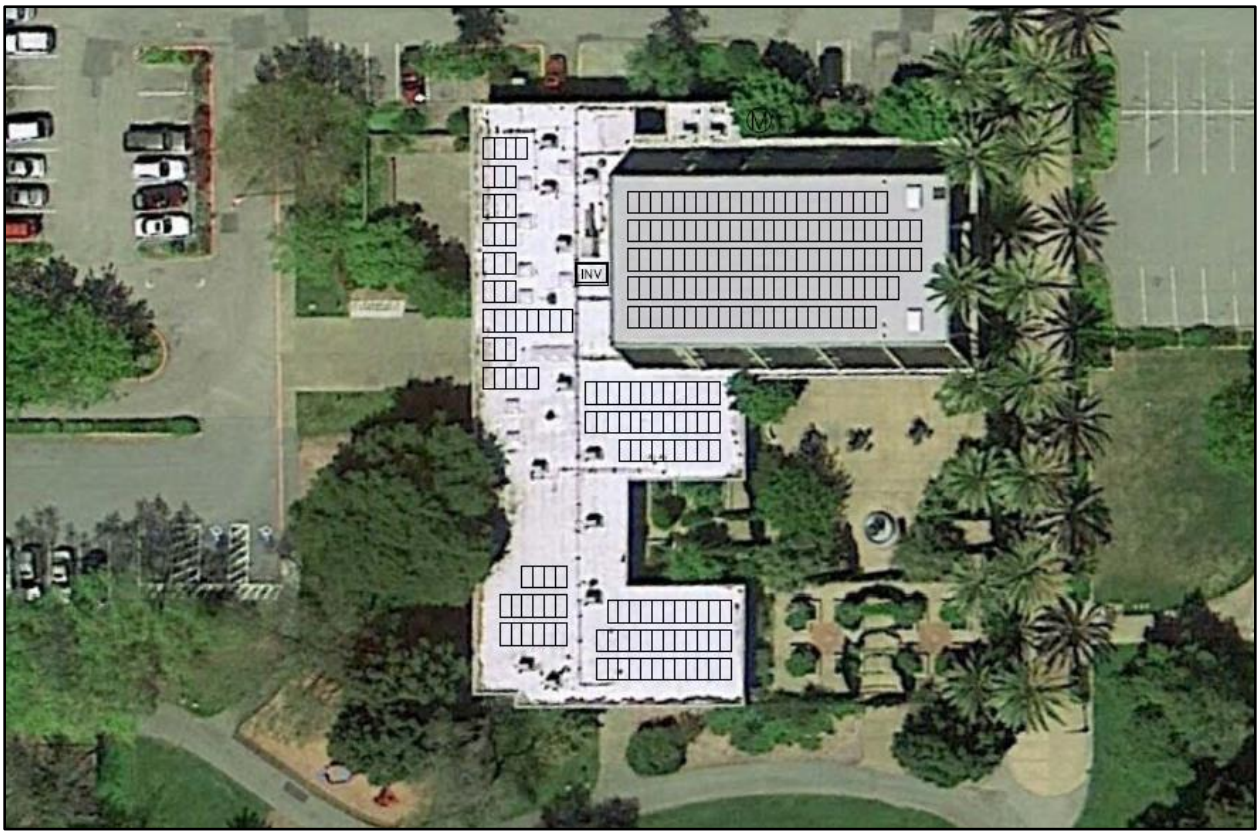
Type:	Carport and Rooftop
Size:	316.8 kW-DC
Annual Output:	461,037 kWh
Annual GHG reduction:	203 tons
Description:	Pending in-depth analysis, the rooftop array will be ballasted but may require a minimum number of attachments to the structural members. Any penetrations will be sealed into the membrane roofing system. This array on the flat roof will be tilted up to 10 degrees. The four elevated arrays in the parking lots will have some impact from morning shade caused by a very tall Redwood tree at the east end of the property. All of these structures will be tilted at 7 degrees and will include lighting, as some existing lighting require removal.
Tree work:	Staff, including the City Arborist, will seek to minimize tree impact and will trim rather than remove wherever possible.
Outstanding issues:	Roof may need to be replaced prior to installation. Pending staff review.

DEPARTMENT OF PUBLIC WORKS – MORPHEW STREET



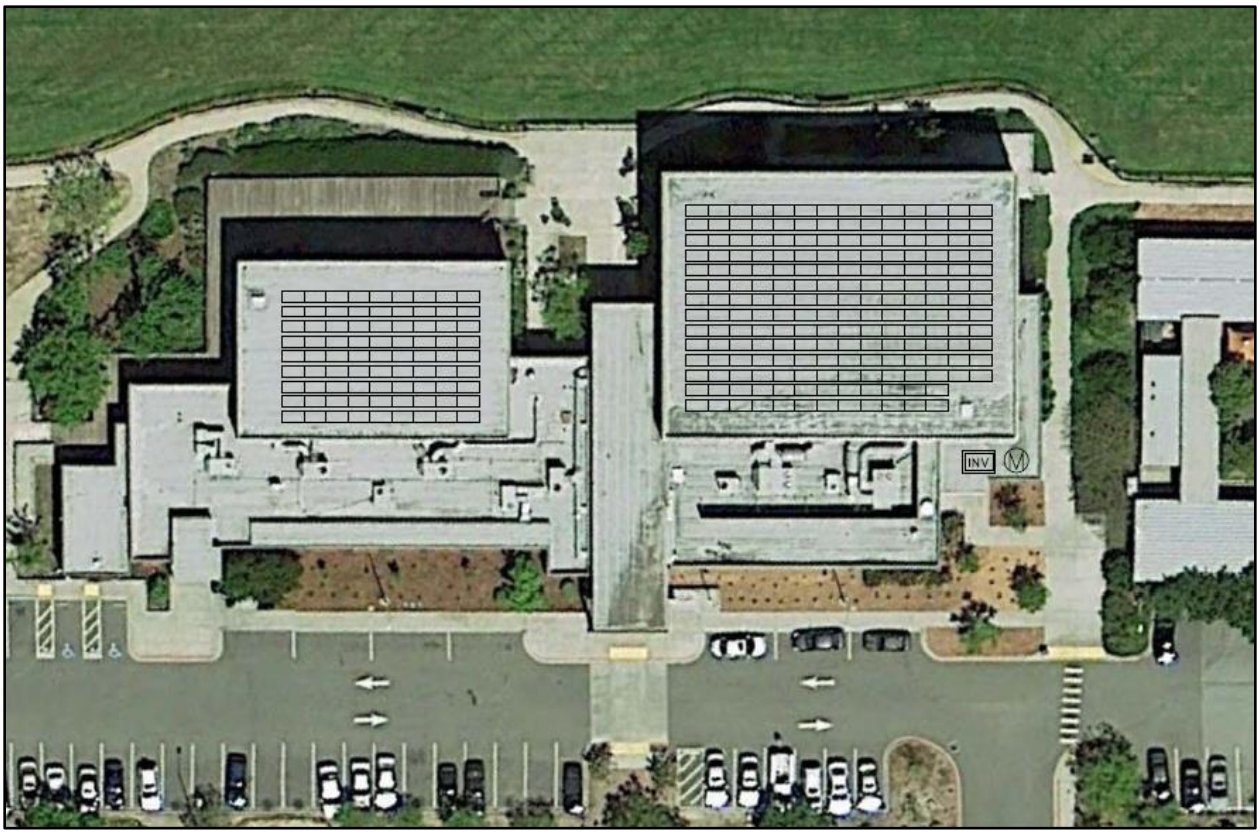
Type:	Rooftop
Size:	193.28 kW-DC
Annual Output:	261,192 kWh
Annual GHG reduction:	115 tons
Description:	The rooftop arrays will be fastened to a structurally sufficient component of the metal roof system. Additional analysis will be needed to determine whether the attachments can be secured to the standing seam roof or if specialized brackets can be fastened to the rafters/joists below and sealed to the flat sections of the roof pans.
Tree work:	None.
Outstanding issues:	None.

SAN RAFAEL COMMUNITY CENTER



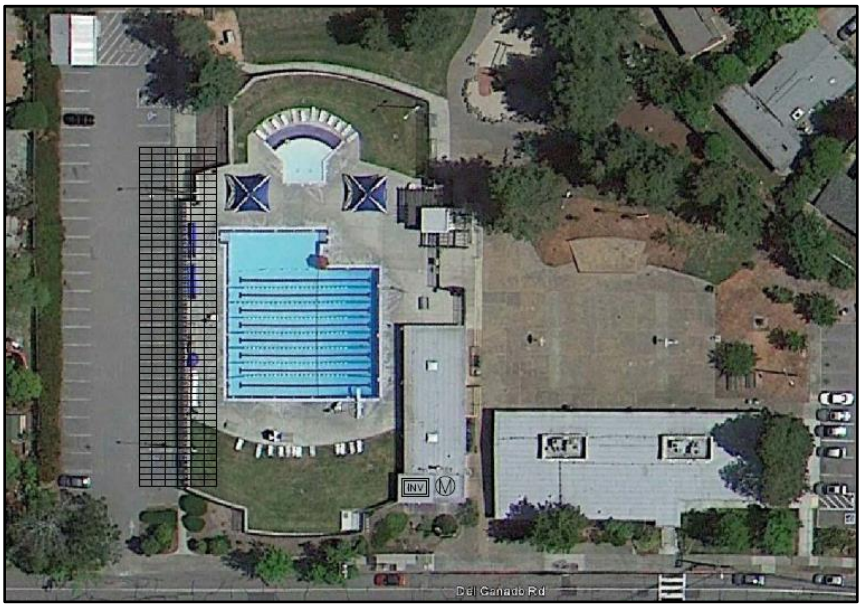
Type:	Rooftop
Size:	76.8 kW-DC
Annual Output:	110,968 kWh
Annual GHG reduction:	49 tons
Description:	The array on the upper roof will be ballasted. Following an in-depth analysis of the structure, a minimum number of attachments to the structural members and reduction of overall weight may be required. Any penetrations will be sealed into the torchdown roofing system. Arrays on the lower roofs will be fastened to the structural members with minimal ballast since they are too small to rely on ballast alone. All array racking on the flat roofs will be tilted up to 10 degrees.
Tree work:	Staff, including the City Arborist, will seek to minimize tree impact and will trim rather than remove wherever possible.
Outstanding issues:	Roof may need to be replaced prior to installation. Pending staff review.

BORO COMMUNITY CENTER



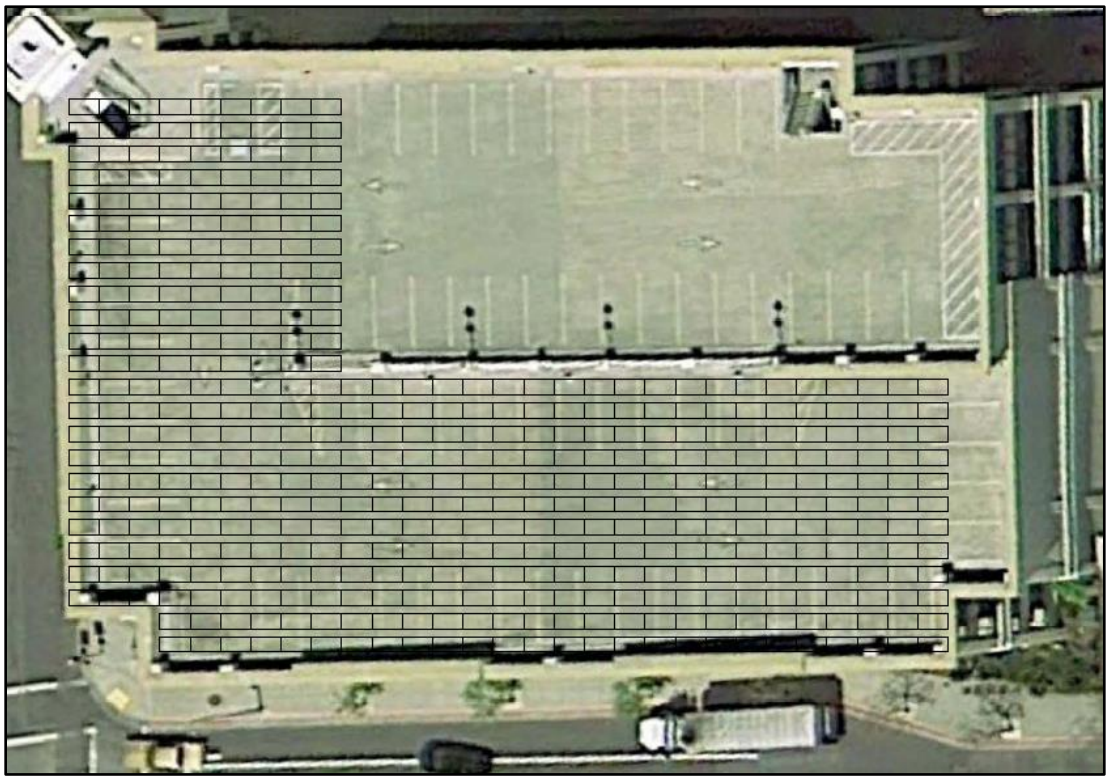
Type:	Rooftop
Size:	87.04 kW-DC
Annual Output:	134,458 kWh
Annual GHG reduction:	59 tons
Description:	An extensive structural analysis will need to be performed prior to construction as the strength of the support members is unknown. A low-tilt racking system will be secured to the structure and penetrations will be sealed. The arrays will cover the two largest flat roofs, maintaining required access according to the Fire Marshal's guidelines.
Tree work:	None.
Outstanding issues:	Roof may need to be replaced prior to installation. Pending staff review.

TERRA LINDA COMMUNITY CENTER



Type:	Carport
Size:	97.92 kW-DC
Annual Output:	141,024 kWh
Annual GHG reduction:	62 tons
Description:	Installation of a solar carport structure over the east end of the parking lot, using an elevated array located in the parking lot adjacent to the pool. The array will provide some shade to half of the parking lot and the western portion of the pool deck and new lighting will be installed.
Tree work:	Staff, including the City Arborist, will seek to minimize tree impact and will trim rather than remove wherever possible.
Outstanding issues:	None.

C STREET PARKING GARAGE



Type:	Carport
Size:	144 kW-DC
Annual Output:	221,529 kWh
Annual GHG reduction:	98 tons
Description:	The installation will include long span steel structures utilizing a truss system located on the C Street Parking Garage. Recent legislation (SB 594) *may allow us to interconnect one system at the C St Garage and use that energy to offset both C and A Street Garage meters. The A Street Garage would be credited virtually. Due to the consumption profile, the solar system will only need to offset 62.2% of the actual load to offset 100% of the electricity bills for both the C and A Street Garages.
Tree work:	None.
Outstanding issues:	*Pending determination of whether garage parcels are considered contiguous and if meters can be virtually linked.