



Red Gap Study

Project Name:	Red Gap Study
Location:	Northern Arizona
Owner:	City of Flagstaff Water Services Department
Project Construction Cost:	N/A

The City of Flagstaff commissioned a report study to determine the feasibility and alternatives for a water transmission system to supplement the City's existing water supply and future water needs. This future water transmission system is to transport water from the City of Flagstaff's recently purchased Red Gap Ranch well sites to their existing water treatment facilities. The future water transmission system tentatively consist of the following major components: 40 miles of 30" pipeline, 4 large booster pumping stations distributed along the pipeline as well as the necessary utility power, network communication and control infrastructure to support its operation. Along other engineering consulting firms, EIC Engineers, L.L.C participation in this report study included some of the following design parameters:

- Utility power to four remote booster pump stations (BPS) and their estimated power consumption;
- 4 to 5 pumps per station operated on medium voltage VFDs versus constant speed;
- Criteria scenarios for remotely controlling various pump operation;
- Pipeline leak detection devices;
- Redundant communication network systems;
- SCADA systems;
- Study on the application of renewable energies.

One of the aspects of the Red Gap Study involved investigating the application of renewable energy technologies such as wind (turbine), solar (photovoltaic), and hydro-electric (pump/generation) for the water transmission system. Some of the associated tasks for completing the study included, but are not limited to:

- Feasibility and comparison analysis for each type energy generation;
- Determining BPS electrical system loading requirements;
- Evaluating equipment generation capacities and efficiencies;
- Analysis on capital cost versus project return savings

