

Introduction

In an effort to meet future water needs, a group of municipalities and counties have partnered with the St. Johns River Water Management District to investigate the feasibility of a seawater desalination facility to be located in St. Johns, Flagler or Volusia County. The Coquina Coast Seawater Desalination Project participants include “Suppliers” as well as “Ex Officio” members. The Suppliers include the cities of Palm Coast, Mt. Dora, Leesburg, and Bunnell, as well as Flagler and St. Johns counties, and the Dunes Community Development District. Four Ex Officio members are also participating in the project: Marion County, the City of DeLand, the City of and Flagler Beach, and the Water Authority of Volusia.

The major focus for the participants in the early stages of the project has been to establish a process for making decisions as a group. These decisions include:

1. Selecting the most appropriate alternative(s) for various components land-based and vessel-based treatment plants.
2. Selecting the best overall land-based treatment projects, vessel-based treatment projects, and combinations of those for further consideration.
3. Selecting the single best land-based, vessel-based, or combined project type to be further investigated and developed in subsequent project phases.

Evaluation Criteria

The project participants’ primary goal was to ensure that the results of the decisions they make as a group will be consistent with the common values held by the individual project participants and their respective communities. To achieve this goal, the project participants held a series of four workshops, which were attended by members of each municipality’s operations, finance, and management staffs, and consultants, as well as members of the public. Based on the input received and discussions held during these four workshops, the project participants elected to use the following six criteria to evaluate alternatives and make decisions about the Project:

- Community Acceptance
- Environmental Stewardship
- Project Reliability
- Permittability
- Comparative Cost
- Risk

The project participants further defined each of these criteria by identifying the specific characteristics of a component or project alternative that should be considered during its

evaluation. For each criterion, the list of considerations was narrowed down to those that could be measured, and to the extent possible, attempts were made to eliminate duplicate considerations that were common to more than one criterion. The project participants also developed the rating scales to be used to guide the numerical scoring of an alternative with respect to each criterion. These are shown in Table 1.

The four technical criteria (Community Acceptance, Environmental Stewardship, Project Reliability and Permittability) were weighted equally by the project participants as they believe each is equally important.

**Table 1:
Project Evaluation Criteria**

Criteria	Considerations	Rating Scale
Community Acceptance	Location of facilities: <ul style="list-style-type: none"> • proximity to community • need for rezoning/rights-of-way acquisition Ability to blend visually into to the surroundings Consistency with local standards Minimizes community impacts (construction and operation): <ul style="list-style-type: none"> • public safety • traffic • noise • lighting • aesthetics Improvement to local economy: <ul style="list-style-type: none"> • job creation (construction and operation) • attraction of tourists/visitors • support of local businesses 	1 = Acceptable to community (significantly improves public support) 2 = Moderately acceptable to community 3 = Neutral 4 = Somewhat unacceptable to community 5 = Unacceptable to community
Environmental Stewardship	Minimizes marine impacts, including: <ul style="list-style-type: none"> • concentrate disposal • threatened and endangered species • impingement/entrainment of sea life • impacts to marine life • offshore fuel management Minimizes non-marine impacts, including: <ul style="list-style-type: none"> • impacts to wildlife and vegetation • threatened and endangered species • wetlands and coastal resources • impacts to water quality • impacts to air quality • cultural resources Minimizes carbon footprint Minimizes waste/residuals	1 = Improvement to existing environmental conditions 2 = No impact to environmental conditions 3 = No significant impact to environmental conditions 4 = Impact to environment requiring mitigation 5 = Impact to environment that cannot be mitigated

Criteria	Considerations	Rating Scale
Project Reliability	Ability to provide sufficient water quantity and quality Time required to deliver project (design, permit, construct) Proven versus new technology Availability of the overall plant Availability of plant materials and components Durability to withstand environmental conditions Power supply Provides flexibility for expansion Security/minimizes vulnerability	1 = Significantly exceeds applicable reliability goals 2 = Exceeds applicable reliability goals 3 = Meets applicable reliability goals 4 = Meets some applicable reliability goals 5 = Does not meet applicable reliability goals
Permittability	Ability to obtain necessary permits and agency approvals Time required to obtain necessary permits and approvals (schedule impacts) Duration of permits required Adverse permit conditions	1 = No impact on permitting or approval process 2 = Permits or approvals can be secured ahead of project schedule 3 = Permits or approvals can be secured within established project schedule 4 = Permits or approvals can be secured, but likely to impact project schedule, siting, design, or operations 5 = Permits or approvals difficult or unlikely to be secured
Comparative Cost	Capital costs, including: <ul style="list-style-type: none"> • property and site development • equipment and materials • construction costs • life cycle costs Operations and maintenance costs, including: <ul style="list-style-type: none"> • labor • energy • chemicals and other consumables • replacement costs • environmental monitoring and compliance Non-capital construction costs, including: <ul style="list-style-type: none"> • design • permitting • project management • right-of-way acquisition • public relations • environmental mitigation Pilot testing Grant funding eligibility	\$ per thousand gallons, based on Net Present Value (expressed in 2009 dollars for Phase 1)

Criteria	Considerations	Rating Scale
Risk	<p>Degree of Control</p> <ul style="list-style-type: none"> • Do the Suppliers have the option to own and operate the facilities if desired? • Direct control of operations vs. contractual enforcement only <p>Dependability of Water Supply</p> <ul style="list-style-type: none"> • Experience of provider(s) • Vulnerability to weather and sea conditions • Vulnerability to man-made disasters • Impacts of maintenance requirements (especially for shipboard equipment) • Security of facilities • Regulations applicable to facilities and operators <p>Financial Exposure</p> <ul style="list-style-type: none"> • Bonding capacity requirements • What would Suppliers have to insure against? <p>Litigation Exposure</p> <ul style="list-style-type: none"> • Challenges to permits or regulatory approvals 	<p>1 = Acceptable level of risk</p> <p>2 = Somewhat acceptable level of risk</p> <p>3 = Neutral level of risk</p> <p>4 = Somewhat undesirable level of risk</p> <p>5 = Undesirable level of risk</p>

Decision Making Process

The project participants agreed upon the following process for applying these six evaluation criteria to make decisions as a group:

1. **Perform Technical Evaluation.** After discussion and input from all participants, each Supplier will score each alternative being considered using the four technical criteria (Community Acceptance, Environmental Stewardship, Project Reliability, and Permittability).
2. **Review Technical Evaluation Results.** The individual evaluations will be tabulated into an overall technical score for each alternative. Suppliers' individual scores will be averaged with equal weight to arrive at an overall score. These results will be displayed graphically, and overlaid with the Comparative Cost of each alternative. (Note: Cost estimates will be used to evaluate overall project solutions. Individual plant components will be based on technical screening only, so cost will not be included.)
3. **Shortlist Acceptable Alternatives.** The participants will review and discuss the results of the technical evaluation, and will determine, by vote of the Suppliers, the shortlist of alternatives to be considered for further evaluation.
4. **Perform Risk Evaluation.** After discussion and input from all parties, each Supplier will score each shortlisted alternative on a scale of 1 to 5 using the Risk criterion. For component evaluations, as well as land-based, vessel-based, and hybrid project evaluations, Risk will primarily be evaluated based on Dependability of Water Supply considerations (described in Table 1). For the final decision of best overall project alternative, the Risk evaluation will include the full set of considerations, including Degree of Control, Financial Exposure, and Litigation Exposure.

5. **Review Decision Results.** Individual evaluations will be tabulated into an overall decision result. For component evaluations, as well as land-based, vessel-based, and hybrid project evaluations, the Suppliers may agree by vote to accept more than one alternative for further consideration. For the final decision of best overall project, the top-ranked alternative shall serve as the recommended project type to be further investigated and developed in Phase 2.

This process is shown graphically in Figure 1.

**Figure 1:
Evaluation Process Diagram**

