



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: John Stufflebean
Katy Allen
William F. Sherry, A.A.E.

SUBJECT: RECYCLED WATER AND
OTHER ENVIRONMENTAL
INFRASTRUCTURE AT
THE AIRPORT

DATE: June 6, 2008

Approved

Date

6/6/08

COUNCIL DISTRICT: Citywide

RECOMMENDATION

Adoption of a Resolution approving the staff recommendation to proceed with the design and installation of recycled water infrastructure at Mineta San José International Airport (SJC) as the near-term preferred alternative rather than using an equal dollar amount to enhance a future solar photovoltaic project.

OUTCOME

The staff recommendation is based on the City's clearly articulated values for environmental stewardship and sustainability; the policy decision for the Council is to determine priorities for the investment of limited financial resources to achieve the best environmental benefits for the community.

Approval of this recommendation provides direction to staff to proceed with design and installation of recycled water infrastructure at the Airport, using \$2 million from the Airport's Terminal Area Improvement Program budget and \$2.1 million from the current Revised South Bay Action Plan budget, for extension of the South Bay Water Recycling system.

Because of the promising potential for solar energy to reduce energy use and costs at the Airport, staff also will continue to explore possible solutions for the development of solar infrastructure at SJC to achieve environmental benefits.

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EXECUTIVE SUMMARY

Council directed staff to investigate the possibility of providing recycled water to the airport, concurrent with the Terminal Area Improvement Program (TAIP) currently underway. Staff from the Airport, Public Works, and Environmental Services departments has developed the information necessary to recommend moving forward with installation of the necessary infrastructure.

Water supply is a growing concern as water planners forecast long-term water shortages in California as a consequence of growth, climate uncertainty, and environmental competition for beneficial uses of water. The use of recycled water supports the Council's Green Vision, and the City has already made significant investments for the treatment and distribution of recycled water. The City Council's Green Vision calls for the City to lead by example, not only by maximizing water conservation efforts, but by increasing the quantity of recycled water produced and distributed.

Because of the Airport's location on the recycled water system, however, and because the Airport would be a relatively low user of recycled water, staff has determined that the City would spend considerably more on infrastructure than it would save by purchasing recycled water instead of potable water. If the Council should decide not to extend recycled water service to the Airport, staff has identified other projects with a likely higher financial rate of return or greater environmental benefits that could be funded with the identified \$2 million from the Airport. The installation of solar infrastructure, discussed below, is such a possibility. This alternative holds promise for energy conservation, reduction of greenhouse gasses, and reduction of long-term energy costs at the Airport.

Notwithstanding the possibility of doing other "green" projects, the current construction at the airport represents a unique opportunity to install infrastructure for recycled water that would otherwise be prohibitive in the future because of costs or impacts to Airport operations. Council direction on this issue is needed by July 1, 2008, as it impacts the TAIP roadway project currently under construction.

On this basis, the Director of Environmental Services recommends that the City install recycled water infrastructure to the Airport.

BACKGROUND

The contract to construct the TAIP was approved by Council in October 2006. Work has progressed well on an extremely aggressive timetable, and the City is on target to deliver the completed project in 2010, on schedule and on budget.

TAIP facilities, including Terminal B and the North Concourse, the customer service facility in the consolidated rental car garage, and new restrooms in Terminal A, are being constructed with

dual plumbing to allow for potential use of recycled water. To bring recycled water to these buildings will require construction of recycled water distribution infrastructure within the terminal area, and a mainline extension of approximately 4,400 feet from the South Bay Water Recycling pipeline. The cost of the distribution system within the terminal area is estimated at \$2.2 million, \$2 million of which is budgeted under the program reserve of the TAIP. The cost of the mainline extension is estimated at \$2.1 million, which is available in the current Revised South Bay Action Plan budget for extension of the South Bay Water Recycling system.

South Bay Water Recycling (SBWR) currently consists of over 100 miles of pipe serving the cities of Milpitas, Santa Clara and San José. During the summer months an average of 15 million gallons of recycled water per day are produced and distributed to over 550 customers for landscape irrigation, industrial, and sanitary purposes.

ANALYSIS

Recycled Water

Water recycling is the treatment and management of wastewater to produce a water of suitable quality for beneficial non-potable uses. Wastewater from sinks, toilets, and drains inside homes, businesses and schools in most of Santa Clara Valley travels through the sanitary sewer system to the San José/Santa Clara Water Pollution Control Plant for treatment. A highly sophisticated process that simulates how nature purifies water removes about 99.9% of the impurities. The result is a high-quality source of water that is safe for a wide variety of uses such as irrigation for agricultural crops, landscaping, playgrounds, golf courses, parks, cemeteries, freeway embankments and medians; industrial uses; and toilet flushing.

Potential uses for recycled water at the New Airport include toilets in the buildings with dual plumbing and landscape irrigation. The TAIP is already being designed to include drought-resistant landscaping and waterless urinals for water conservation, which reduces the potential amount of recycled water that could be used. Recycled water possibly could also be used in the Airport's cooling towers for mechanical equipment, but additional water treatment may be needed for this application. Staff has approached the rental car industry about the possibility to use recycled water in the car washes in the new rental car garage. Although recycled water has been used successfully in Marin County and other areas for this purpose, rental car companies serving San José have expressed concerns that would need to be addressed prior to its use locally. Airport and ESD staff will work to address concerns related to recycled water use in both cooling towers and car washing, and advise and assist rental car companies at the Airport with measures that may be taken to use recycled water.

With these uses in mind, the Airport has an estimated potential recycled water use of between 16 million and 23 million gallons annually in 2010 (44,000 to 63,000 gallons per day), and an estimated annual recycled water use of between 18 million and 25 million gallons annually (49,000 to 69,000 gallons per day) when the Airport reaches its capacity of 17.6 million annual passengers. The high end of the range assumes that recycled water can be used in cooling towers

if suitable treatment becomes available, and is equivalent to the water use of approximately 140 average households in Santa Clara County.

Recycled Water Economics at the Airport

At the volumes noted above, it is estimated that the Airport will save between \$23,000 and \$36,000 annually, depending on the extent of recycled water use. Assuming an annual savings of \$30,000 (based on the difference in today's retail cost between potable and recycled water) the infrastructure cost of \$4.3 million would not be realized during the anticipated life of the project. However, other factors that would impact the economics of the project include potential grants and the value to South Bay Water Recycling of the advertising gained through mandated signage. Discussions with grant program managers suggest that federal and state funds of up to \$1 million, equaling between 25% and 50% of eligible project cost, may be available from the US Bureau of Reclamation (USBR) and the State Water Resources Control Board, and they have expressed a strong interest in providing a grant for this project. However, the Airport's investment of \$2 million is not completely justified based on the savings on the cost of water alone over the life of the project.

Alternative Projects and Solar Energy

Staff identified a number of viable and environmentally beneficial alternative projects related to the Airport that would likely have better economic returns than the use of recycled water. Installation of solar panels, either under a new power purchase agreement or directly by the City, appears to be the best alternative project. Paybacks under power purchase agreements are anticipated to be well within the useful life of the project. In addition, solar energy potentially could provide substantial environmental benefits from reducing demand on the electric grid, thereby reducing the use of fossil fuels; reducing the emission of greenhouse gases; and reducing long-term operating costs for the Airport.

As previously reported to Council, Airport staff is currently soliciting proposals for a power purchase agreement that could supply 20% of the Airport's electricity needs. Initial results of this effort are being evaluated; however, the proposals received do not generate the level of cost-effectiveness originally anticipated. Staff will provide recommendations on next steps upon completion of this evaluation.

Non-Economic Issues for Consideration

While the economic savings resulting from the use of recycled water does not offset the cost of the proposed infrastructure, there are other benefits whose value to South Bay Water Recycling and the Green Vision can be considered to justify this investment. For example, recycled water use at the Airport would enhance San José's reputation as a "Green City" and reinforce the value of recycled water to our community. Nearly 11 million passengers per year traveling through SJC would see signs in the Airport's restrooms, landscaping, and terminals about the use of recycled water, underscoring this community's commitment to environmental leadership and its values for wise water use and sustainability.

In addition, recycled water at the Airport could improve the City's ability both to connect new customers as well as to find additional uses for recycled water. The combination of landscape irrigation, toilet flushing, cooling tower, and carwash uses at a "landmark" location like the New Airport could demonstrate a variety of successful uses in a single well-known location to a large number of people and businesses, and further strengthen public understanding and acceptance of recycled water as part of the solution for limited water resources. The Leadership in Energy and Environmental Design (LEED) certification for Airport buildings would not be compromised in any case.

Finally, installation of recycled water infrastructure will also serve as a risk management strategy against potential future water availability constraints. As noted earlier, water supply is a growing concern statewide. Installation of needed infrastructure now, when installation can be accomplished most cost effectively, provides an alternative supply to ensure adequate water service to the Airport in the future. Furthermore, extension of the recycled line into the Airport terminal area will provide the opportunity extend service across Highway 87, in order to establish a secondary service route to First Street.

EVALUATION AND FOLLOW-UP

Recycled Water

With direction to proceed with recycled water, the Airport and Public Works staffs would work with the TAIP design/build contractor to install pipelines and laterals concurrent with roadway construction already underway. ESD will seek Treatment Plant Advisory Committee approval for funding the main from existing SBWR funds, and pursue reimbursement grants from the state and federal governments. ESD will pursue installation of the mainline once funding has been approved.

Solar

With direction to proceed on alternative projects, staff will fully develop a program to implement \$2 million of solar photovoltaic improvements that yield the best payback. As noted above, paybacks under power purchase agreements are anticipated to be well within the useful life of the project. In addition, solar energy potentially could provide substantial environmental benefits from reducing demand on the electric grid, thereby reducing the use of fossil fuels; reducing the emission of greenhouse gases; and reducing long-term operating costs for the Airport.

POLICY ALTERNATIVES

Alternative 1: Proceed with installation of Recycled Water Infrastructure at the Airport.

Pros:

1. Between 18 and 25 million gallons of potable water will be conserved annually.
2. The City has the opportunity to inform by example nearly 11 million travelers per year about the importance of water resources and the City's commitment to environmental sustainability through the use of recycled water.
3. The City enhances its leadership position in using recycled water to its fullest potential at a highly visible landmark location.
4. The City preserves the opportunity to provide additional recycled water to airport facilities in the future.
5. Toilet flushing, industrial cooling, and other non-potable water uses at the Mineta San José International Airport will be served with recycled water instead of drinking water.

Cons:

1. Cost analysis indicates that the City will not recoup the \$4.3 million cost of installation during the useful life of the construction. The City may be perceived as acting without financial prudence.
2. Installation of the recycled water infrastructure will impact current TAIP roadway work and project timing.
3. The City will not realize efficiencies and cost benefits that could be attained through additional solar installations during the early years of the operation of new Airport facilities.
4. \$200,000 of the cost of the installation is largely unfunded in the Airport's TAIP current program reserve budget.

Reason for not recommending: Not applicable.

Alternative 2: Proceed with an additional \$2 million investment in solar power at the Airport.

Pros:

1. The solar installation, in combination with other solar projects currently planned at the airport, will allow the City to secure additional power through renewable energy.
2. As the cost of energy continues to increase, alternative energy at the airport is a good model for residents and businesses.
3. The return on investment is much better than the recycled water return on investment.
4. The City sustains no unbudgeted costs associated with the installation of the recycled water infrastructure and delivery system.
5. The TAIP sustains no additional construction impacts to the TAIP roadway project.

Cons:

1. Landscape irrigation, toilet flushing, industrial cooling, and other nonpotable water uses at the Mineta San José International Airport will be served with potable water instead of recycled water.
2. It will be difficult and costly for the City to install recycled water infrastructure at the Airport in the future.
3. The City may be perceived as urging developers and project owners in San José to use recycled water but unwilling to use it at its own facilities.

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4. Future advances in solar technology may reduce the cost of future solar installation on a real dollar-per-kilowatt basis.

Reason for not recommending: The solar power investment is not precluded in the future by the current construction program at the Airport.

PUBLIC OUTREACH/INTEREST

- Criterion 1:** Requires Council action on the use of public funds equal to \$1 million or greater. **(Required: Website Posting)**
- Criterion 2:** Adoption of a new or revised policy that may have implications for public health, safety, quality of life, or financial/economic vitality of the City. **(Required: E-mail and Website Posting)**
- Criterion 3:** Consideration of proposed changes to service delivery, programs, staffing that may have impacts to community services and have been identified by staff, Council or a Community group that requires special outreach. **(Required: E-mail, Website Posting, Community Meetings, Notice in appropriate newspapers)**

The above criteria do not apply.

COORDINATION

This memo has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

FISCAL/POLICY ALIGNMENT

The San José Municipal Code requires that capital projects at the Airport be consistent with the adopted Airport Master Plan. The recommended alternative would support the implementation of the TAIP, whose project components are expressly identified in the Airport Master Plan as amended June 13, 2006.

Both alternative projects are consistent with the Economic Development Strategy adopted by Council in November 2003, and align most significantly with Strategic Initiative #1: Build a World-Class Airport and Air Services.

Both alternative projects align with the City's Green Vision.

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COST SUMMARY/IMPLICATIONS

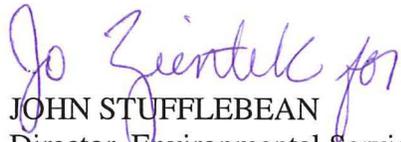
The cost of bringing recycled water to the new Airport facilities is estimated at \$4.3 million, \$200,000 of which is unfunded. The simple payback of this project greatly exceeds the useful life of the buildings it is intended to serve.

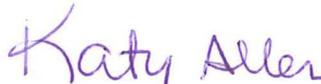
BUDGET REFERENCE

Not applicable.

CEQA

CEQA: Resolution Nos. 67380 and 71451, PP 08-071.


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