

Funding Urban Landscape Water Efficiency Programs with Adjusted Agriculture Water Offsets

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Abstract. *Does it make sense to continue to deliver water to Southern California urban landscape systems despite great economic, social and environmental consequences over the last 40 years? What isn't discussed is the irrigation efficiency rating is well below 50% at many urban parks and schools. Water agencies have used "efficiency grants and rebate" paid by the water user to assist with urban landscape retrofit programs reducing the water demand immensely.*

Economic conditions in southern California forced retrofit programs to be cut sharply making each gallon of water sourced to be less efficient. So the question is asked; is it inappropriate for urban rate-payers to support out-of-region corporate farms in exchange for their water to be used ineffectively?

This presentation looks at what a \$50 million per year investment in schools and parks can do to increase efficiency and improve the social welfare locally and across the globe.

Key Words. Water, Irrigation, efficiency, sustainable, landscape upgrades, agriculture, water transfers, energy, employment, obesity, social justice, climate change, food shortages.

A Model for Change

1. Energy is deeply imbedded in southern California water.
 - Water must be pumped multiple times for a +2,300 foot elevation gain.¹
 - Four pumps, each being large enough to run a battleship.²
2. Inefficient water use in urban areas can be linked to Social issues in the agriculture regions of the San Joaquin Valley.
 - Unemployment³
 - US @ 10%
 - CA @ 12%+
 - Kern @ 18%
3. Urban schools and parks are unable to fund and maintain parks
 - Retrofit rebate dollars have shrunk; from \$50million to less than \$15million in 3 years.⁴
 - Irrigation systems at <50% DU⁴
 - Obesity is a major California problem.⁵



Sustainable Supplies and the California Community

3. Social

1. New landscape promotions and requirements called “Water Wise Landscapes” account for substantial savings in water use in urban areas.⁹
2. Better funded retrofits programs equals increased urban employment, especially when workforce partnerships are involved where job skills are learned making for a ready-to-work workforce.
 - a. “Infrastructure (upgrades) could be the way out of job-starved (situation) we find ourselves in”.¹⁰
3. Improved landscapes represent a healthier community.
4. Reduction in green house gases can be achieved with smart landscapes that assist in lowering the demand of industrial pumping.⁶



Sustainable Supplies and the California Community



Political Stakeholders Have Messages



Community Stakeholders (local, region, national and international)

Social Justice is a subject not normally covered in the science and engineering arena, but it is a critical part of sustainability

The 3 Orbs of Sustainability

ECONOMIC

SOCIAL

ENVIRONMENTAL

In the public and media sector, too often sustainability is connected to a political viewpoint, generally called SOCIAL Justice.⁸

From a business point of view, ECONOMIC stands to get a majority share of attention.⁸

And there is also the ENVIRONMENTAL voice that tends to look at things in a modeled view.⁸

The Best Stuff on Earth



High Commodity Prices



Lessons to be learned, California agriculture is connected to the world

Substituting Offset Water for Local Retrofits

It is estimated that over \$50,000,000 is annually paid by an urban water agency to out of region growers to for their water⁶.

If twenty percent or \$10,000,000 was diverted to urban landscape efficiency irrigation retrofit programs over five years, 400 schools could have their play grounds upgraded, installed or retrofitted to natural turf.

The goal is to have the lowest efficient schools or mini-parks (DU 20%?) upgraded to a minimum of 65% DU.

These 400 schools or parks in communities that are unable to find adequate funding are normally in underserved and disadvantaged communities where the outdoor experience is lacking and obesity is chronic.



A single school district in southern California serves 700,000 students at 700 schools.¹¹

Some schools have not had an irrigation upgrade since the 1970's.

Using a conservative number of 1.5 acres of natural turf per school campus.

Target 35% water savings with at the poorest DU campuses.

5 year target based on meter rates of \$1,200 AF for years 2012 to 2017.

\$50,000,000 available to fix school sites with diverted "offset" money and grants provided via Workforce Partnership programs.

Not factored is many sites actually may need a booster pump system installed to meet the expectations of an institutional irrigation system.

Landscape upgrades can contribute to a healthier agriculture marketplace with respect to jobs.

And help feed countries around the globe.¹²

- Arab Spring lesson

Landscape retrofits will continue to contribute to higher employment rates;⁶

- Irrigation consultants
- Manufacturers
- Distributors
- Contractor Firms



Landscape retrofits will lead the fight against poor health conditions in the region

- Obesity in young adults in California is a matter of national security.⁵
- More than 50% of California elementary schools do not meet the 200 minutes of physical activity required every 10 days.⁵



The Facts from Costs to Directives

California Potato



Results from an inefficient irrigation system at an urban school

To farm or to fallow – selling water to urban areas without accounting for where the water will be used.



It is difficult to resource current figures listing the amount of water offset in Kern County for urban areas. *Call that the hidden fact^x.*

Water transfers from the Imperial Valley to the Southland exceed 100,000 AF.¹⁴

Millions of dollars are going into regional water collection, diversion, spreading and other long term strategies. But what is missing is the long-term savings if low performing irrigation systems become upgraded to last another 4 decades.⁷

Urban water costs are expected to rise, doubling for the second time by 2015.⁴

Electricity costs, Legislation and environmental conditions report that if a local region reduced its water demands by 100,000 AF over a period of time, enough electricity would be saved to power 25% of all the homes in the same region.¹³

Running the faucet for 5 minutes equals the power to run a 60 watt bulb for 14 hours.¹⁵

Pre-Conclusion; Efficiency vs. Cost

The cost to be efficient will never match the direct outcome.

Solar Power / Wind Power vs. Fossil Fuels

Electric Vehicle vs. Internal Combustion

However, consider the indirect costs associated with pumping water in such a spectacular fashion, water that could have been used to grow commodity crops keeping the farming community vibrant.

And then the attributes of fixing what needs to be fixed post-haste; jobs are created and urban irrigation systems (finally) get upgraded.



Conclusion

Sustainability works best in a balance. “Social” considerations are normally excluded when it comes to the water saving discussion, but it is just as important as the “Economic and Environmental” orbs of sustainability¹⁶.

Smart, effective and efficient retrofit programs equate to long-term savings. Agricultural water transfers are a short-term fix and 20% of the money provided to offset could be kept within the Southland region for a five year retrofit program.

Water agencies could put this retrofit program into action immediately if their Integrated Water Management Plan is amended to keep rate payers fees local and economic job stimulus on the water-use side is targeted.

Jobs will be created in the urban areas and re-created in the farming districts.

Commodity food prices could become more stable resulting in a more stable global arena.

Children would become active participants in outdoor activities helping to turn back the tide of increased long-term chronic health concerns.

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