Option Submittal Form

Contact Information (optional): ☐ Keep my contact information private

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Date Option Submitted: 01/07/2012

Option Name:

Upfront Demand Reduction

Description of Option:

When confronted with an unlimited demand on a limited resource, ultimately the only remaining option is serious upfront demand reduction.* This can be done "brutally" in emergency situations, with user regulation (no outside watering), use limits (<100 gpd per household), et cetera. But it can also be done intelligently, over an extended period of time, through education preceding regulation and limitation, so that a more enlightened populace will understand and accept the limitations of nature - especially if the education process shows that a reasonably high standard of living can still be had in a situation that "fits" natural limits.

This is not just a matter of "public education" as it is usually construed; it also has to focus on "educating the educators," especially the faculties that prepare their students for careers in public planning, engineering, landscape architecture, and business (land developers). Upfront demand reduction also had to involve education at the level of county boards of commissioners, local and regional planning departments, real estate associations, and other entities intimately connected with land use policy. Maintaining "local land use control" is a maxim in much of the West, so a much greater effort has to be expended - by public utilities, state and federal government agencies (like the Bureau of Reclamation) to make certain that the "local land use controllers" are reasonably enlightened about future water supplies. As the water suppliers in Tucson realized, we can no longer say, "Let the people come, we will find the water for them." But this has to start with public entities and private developers beyond the direct control of the water providers - hence the need to enlighten those entities and developers.

Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

Serous upfront demand reduction is already being implemented through what is referred to as "passive conservation" - legislation mandating water-efficient plumbing fixtures. (The next step there will probably be rebates and other incentives for composting toilets.)

The biggest gains, however, will come to the extent that upfront demand reduction begins to successfully impact outdoor landscaping. This will probably be most acceptable in new suburban and exurban developments, at a little remove from already-existing developments with "bluegrass covenants" and the like, provided it is demonstrated to be potentially attractive and comfortable. Incentives to increase both the density of private living space and the amount of outdoor public living space in existing communities will enable better control over water use.

Quantity and Timing: Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g,. more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

A development south of Denver, Colorado, has been planned to use one-third the standard gpd allowed for households in other developments nearby. Intelligent planning should make it possible to cut the per capita consumption in half for new growth in the West by 2050, through serious upfront demand reduction. That will, however, require probably two decades of fairly dedicated education - education of the general populace, and a more focused education of the land-use policy makers. Reduction in demand for water would begin showing up by the end of the second decade of the education effort, and should grow significantly in the third through fifth decades.

Additional Information

Technical Feasibility: Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

A transition to composting plumbing and other technical demand reduction, beyond the current "passive conservation" efficiency devices, would probably require 20-40 years of consumer education, the redevelopment of a responsible citizenry and would probably require the diversion of a portion of a community's water supply (before treatment) to keeping the hydraulic sewer system operational during the transition phase.

The rest is all education, and that depends on the maturity and willingness to hear the message of, first, the general populace, and second (and probably more difficult), the public officials, planners, developers, and those who educate those entities. It would take at least a decade to get a

Costs: Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., $/acre-foot or $/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

Isn't this a kind of superfluous question at this point in the collection of ideas? Technological efficiency, especially extreme efficiency, is always going to have a higher price tag up front - and the utilities cannot afford to maintain the low rates associated with inefficient use and still maintain their systems, so long-term savings for system users are a little illusory. The fact is, when the necessity of something is acknowledged, people find a way to pay for it.

The education process should have no significant funding costs, if it is done intelligently; it is a matter of gradually replacing naivete and conventional

Permitting: List the permits and/or approvals required and status of any permits and/or approvals received.

N/A

Legal / Public Policy Considerations: Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

Serious upfront demand reduction will eventually involve changes in public policy where land use is concerned, similar to what Tucson is experiencing. If it is done carefully and at a reasonable pace, this should not be problematic. Fundamentally, the agreement necessary for implementation is the agreement that the change is necessary, that demand cannot grow infinitely with a finite and limited resource.

It will also require a water-user adjustment to the idea that a water utility supplies a service with a relatively high fixed cost per household served, rather than just selling measured quantities of water where using less gets rewarded with lower total cost.

Implementation Risk / Uncertainty: Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

There's a risk that an extended drought might force the transition to a much-reduced demand per household faster than the culture is able or willing to move. If the education program achieves a general cultural transition to more disciplined and responsible behavior, with living systems better matched to the ability of an environment to support and sustain those systems, the only risk is an extended period of "fat times" which would over time probably result in a decay of responsible behavior.

Reliability: Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

Water Quality: Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

A future transition away from a hydraulic sewer system to composting systems would undoubtedly have water quality issues in the transition period, within existing systems, but they don't seem insurmountable.

Energy Needs: Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
Since this a behavior change rather than a technological change, the energy	

Hydroelectric Energy Generation: Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
None	

Recreation: Describe any anticipated positive or negative effects on recreation.

Locations	Anticipate Benefits or Impacts
None	

Environment: Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Locations	Anticipated Benefits or Impacts
Reduced urban demands in Upper Basin	No ever-increasing demands on quality headwaters water.

Socioeconomics: Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

If the magnitude of the education problem is acknowledged, and time is built in the program to work carefully and intelligently through the problems of conventional wisdom, habit and human stubbornness, then the ultimate effect will be a populace that is more responsible in its patterns of use, and more conscious about their place in nature and culture. If it is forced over a short-term, it will be expensive to enforce, difficult to sustain, and will result in a resentful and less internally responsible populace.

Other Information: Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

The Sterling Ranch in Douglas County, Colorado, is an example of a planned unit development that has opted for serious upfront demand reduction, and exemplifies the kind of intelligent land use that should happen (at least for the remainder of the Automobile Era). Information available at: http://www.sterlingranchcolorado.com http://www.douglas.co.us/planning/sterlingranch/index.html