

Consumption and Waste Reduction

Evaluation Criteria:

- Potential Green House Gas Reduction
- Cost to Implement Measure
- Ease of Implementation – Public Support
- Visibility of Measure – Raises Public Awareness
- Social Justice – Equity of Measure’s Benefits

	Category	Action	Green Dots	Red Dots
A	Consumption and Waste	Institute a City of Davis green innovation award program.	6	0
B	Consumption and Waste	Train high school students to become “Waste Reduction Monitors” that judge the performance of local restaurants on waste practices.	5	1
C	Consumption and Waste	Encourage greywater collection and use.	34	0
D	Consumption and Waste	Encourage on-site wastewater processing for new developments.	3	4
E	Consumption and Waste	Expand and promote the Davis Freecycle web site.	9	0
F	Consumption and Waste	Develop a City wide rainwater collection and usage program.	31	0
G	Consumption and Waste	Encourage natural storm water drainage and retention in landscaping design.	32	1
H	Consumption and Waste	Reduce the water used for irrigation of the greenbelts by 50% and require no long term irrigation on new developments.	23	1
I	Consumption and Waste	Conduct a community education campaign on the environmental impact of meat consumption.	10	5
J	Consumption and Waste	Encourage citizens, organizations, and businesses to buy locally produced food.	19	0
K	Consumption and Waste	Expand curbside waste pickup to include more recycling and wet composting.	20	1
L	Consumption and Waste	Recycle Styrofoam citywide.	8	1
M	Consumption and Waste	Adopt Zero Waste Goal for our community.	22	0
N	Consumption and Waste	Promote a campaign to “Give the gift of an experience rather than an item”.	3	0
O	Consumption and Waste	Develop a biogas energy facility.	8	1

	Category	Action	Green Dots	Red Dots
P	Consumption and Waste	Promote “time of use” water metering.	16	0
Q	Consumption and Waste	Eliminate heavy metal batteries within the City of Davis and beyond.	2	3
R	Consumption and Waste	Implement cradle to cradle (lifecycle) appliance recycling program.	6	0
S	Consumption and Waste	Encourage installation of Energystar appliances.	5	0
T	Consumption and Waste	Implement City policy that favors contracting with companies that are energy efficient and use non – toxic chemicals.	12	1
U	Consumption and Waste	Implement city policy favoring the purchase of local, climate friendly, and recycled content products.	13	0
V	Consumption and Waste	Mandatory construction waste recycling (in progress thanks to DWR).	5	0
W	Consumption and Waste	Create a city salvage yard to promote reuse of goods.	40	0
X	Consumption and Waste	Provide reusable utensils, dishes and water containers at City Facilities to enable zero waste events.	8	0

COMMENTS:

- B - Why just high school for “B”; should be K-12, youth is the key!
- H - Promote city and private planting of drought resistant indigenous plants.
- H – Our greenbelts could be vastly improved. I regularly ride through the north Davis ones and strongly feel that most of the grassy areas are underutilized. Lets grow food there. Lets plant drought-tolerant plants that are beneficial to good bugs. Finally, lets never, ever allow any more greenbelts that have houses backing up to them instead of facing them. They’re not safe after dark and they’re much less lively than they can and should be.
- H – Why is there not more up here about water? We should be most concerned about this, of all goods.
- K – add restaurant food recycling.
- X – you bet! Lets start w/4th celebration 08!
- City-edge retail farms (very local food) cuts waste dramatically. (green dot)
- Disposable shopping bag levy in supermarkets and other stores—use the monies to fund bag-making workshops! Added bonus: supermarkets can lower their prices by reducing bag-related expenses.
- Better monitoring of watering (I see apartment campuses and individual homes watering in the middle of the day – and have called up apartments to complain!) and broken irrigation systems.

- Require waste reduction measures on all new development (stormwater capture, toxic paints, energystar appliances).
- Sign up with USPS for e-waste mailers. Recycle batteries, phones, ipods.
- Encourage people to reduce waste and collect trash less often.
- Improve city water quality so people won't buy bottled water.
- Garbage production and collection. Use of garbage 1) have a program of shared containers for neighbors 2) find a way to give incentive to those who produce minimal garbage 3) more emphasis should be given to recycle items and material disposed by residents.
- Adopt a "pay as you throw" garbage collection rate structure to incentivize waste reduction. Many other cities in CA have this structure in place. (Right now residents w/small garbage cans in Davis pay the same collection fee as those w/large cans.) (green dot)
- I'm all for promoting local businesses and eating home-grown produce but I think a more thorough analysis of food miles is needed here. What is "local"? Is it better to distribute lost of food with a big vehicle than some food in a smaller truck?
- Make building materials from garbage, plastic bags, etc.
- I recycle and compost and have very little in my garbage yet I pay the same amount as those how fill their container. (green dot)
- Awareness that cement is one of top 5 sources of GHG – reduce use of cement city wide. This also has potential to reduce heat-island effect.
- Promote bulk purchases (no packaging).
- Ban gasoline powered leaf blowers. (green dot)
- City should sponsor educational workshops on energy use (residential) carbon footprint, water use, lifestyle impact, etc.
- Provide concrete help (city staff or trained volunteers) to install rainwater/greywater system in so many homes per year –same for solar panels, clothes lines – perhaps for folks under a certain income or over a certain usage level. Experiment with waterless toilet system – install these in a few volunteer homes to see how this works.
- Remove 50% of lawns in schools around perimeters of soccer and play fields. Replace w/mulch and native trees. (green dot)
- Change city ordinance to allow hoofed animals to eat lawn/shrub waste. Reduce green waster and eat local. (green dot)
- We have a change to make our wastewater treatment plant produce all the energy it needs as we upgrade it. (*see attached scanned article "Wastewater Sludge: A New Alternative Energy.")
- Waste is not a renewable resource. Waste=food.
- Do not outlaw heavy metal batteries – batteries are needed to store solar and wind energy. What has that to do with GHG's anyway?!!
- No more sales of bottled water in Davis. Public education campaign.
- Mandate greywater systems in all new construction.
- Expand current bulky items program to include a much larger salvage operation. Salvageable items should be hauled on top of load and dropped off before recyclables and trash. Easily accomplished/huge carbon reduction!
- Different size waste containers to promote waste reduction.
- Reduce lawns on greenbelts.
- Initiate a real "buy recycled campaign" in Davis.
- Allow composting toilets and nutrient recycling within the community.
- Ban sale on plastic bags, Styrofoam and non-recyclable products at Davis merchants.
- Could we put a tax or a ban on water bottles (single use 16-32oz)? we could have some sort of incentive for people to use Nalgene's/Kleen Kanteens/Sigg etc instead.
- Change the ordinance prohibiting the growing of food crops on lawns. Salons use TREMENDOUS amounts of water which could nourish vegetables and fruits within the same space! Food not lawns...
- Don't allow new buildings to have fireplaces.

- Don't allow restaurants to use Styrofoam.
- Minimize landscaping that needs hedging/pruning. See "River Friendly Guidelines on Landscaping" on the web.
- Promote small size of waste cans (for pickup) as standard (low cost) – currently medium size is standard.
- Change the margin default on city and school computers. The word default margin uses only 57.8% of the page for printing. The rest of the paper is margin.
- Address the climate change impact of new drinking water supply project (Sacramento River).
- C & D is 10%-30% of waste stream. Very recyclable. Reduce virgin resource extraction.
- Reuse is highest form of recycle in energy savings and \$. Value is in design.
- When recyclable products, notably paper, are used at an event, provide recycling trash cans, otherwise its pointless.
- I'd like to know more about the biogas facility.
- Encourage people to plant Mediterranean plants that use less water.
- Start a really really free market (like the one in SF).
- Policy of retail changing for giving out plastic bags.
- I think the City of Davis could be the premier supplier of canvas/nylon shopping bags. The city could have them made and sold at cost to the public. Ideally we could have a contest for the design... not to be facetious but I'd suggest Davis CACA (California climate action).
- Allow composting toilets to remove black water from existing sewer lines/creating primary greywater line
- Have city composting for people without land for composting.
- Encourage recycling at large apartment buildings.
- Biosolids recycling @ WWTP good.
- We can cut down water usage greatly if the tenants pay for the use. As properly aware, we have no control on the wastefulness. The city should allow tenant to sign up for the service.
- Expand DWR curbside/on site effort to include all plastics that are currently recyclable, regardless of whether or not they make money for DWR. This creates a market for them by demonstrating availability to prospective investors.
- If water use is limited on greenbelts, plant native plants and trees to create urban forests. Trails should be made through it for walking.
- Require the use of energystar appliances instead of recommendation.
- I would love to get help w/examples of rainwater (roof water) collection structures. I have a flat roof, but don't find easy-to-use guidance. A volunteer "green squad" to assist, like Tree Davis might be good.
- Begin charging higher rates for larger garbage cans. Using the largest size as the "default" when containers were changed a few years ago was a big mistake.
- I think the Davis police could do more patrolling on foot/bike. They could park their vehicle and "walk the beat"; they could put bike racks on their vehicles then patrol an area on bike. Cell phones and video cameras would assist. A real benefit would be improved public relations (badly needed in my opinion).
- Create a low-water-low-green-waste locally sourced materials – friendly front yard landscaping competition (along the lines of Enterprise lights competition).
- Encourage use of laundry lines.
- Use of "permeable concrete" I putt out my garbage and recycling every other to every 3 weeks and have very little. I compost. The city could save energy by reducing pick-up to every other week & encourage residents to reduce packaging.
- With regularly/bi-monthly utility bills, add survey about: 1) what measures were taken to reduce energy (with choices to check) and 2) what measures do you expect to take in the next 6 months (w/choices).
- Support thrift and consignment stores. Have community wide "Freecycle" days.

EXPLANATION FOR RED DOTS:

- B, I – Government needs to keep their hands out of this.
- D, T – let the market decide this.

- D – I'm not sure how this reduces GHG – what is the trade-off between energy cost for pumping water versus building a bunch of facilities – water are the economics of scale?
- H – Most greenbelts yes—definitely xeriscape, but for fields and such—need water. The fake grass surfaces are HOT.
- I – Support local (sustainable) husbandry.
- K – Promote on-site compost or make collected waste available to return back to local landscape.
- L – eliminate Styrofoam use citywide.
- Ban plastic bags, ban Styrofoam (x2).
- Wastewater retention in landscaping: What do we do in summer for these plants?
- No more lawns! Edible landscaping, gardens ... see Village Homes. It works great there.
- Eliminate plastic water bottles.



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Wastewater Sludge: A New Alternative Energy

By Dawn Forsythe
Jun 12, 2008

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Alexandria, VA – Wastewater treatment plants are net users of energy. In the U.S. they consume an estimated 21 billion kilowatt hours per year. There are important reasons for this energy use, as society demands increasingly intensive treatment to remove nutrients and chemicals from wastewater before it is discharged back into water bodies or is reused. But energy use is coming under increasing scrutiny, with the financial cost of energy and the environment

cost of energy generation driving new interest in the conversion of sewage sludge to energy.

Researchers are exploring sustainable wastewater treatment with a reduced carbon footprint. The view of municipal sewage has shifted, from a waste to be treated and disposed of, to a resource that can be processed for recovery of energy, nutrients, and other constituents.

Research has demonstrated that sewage actually contains 10 times the energy needed to treat it, and it is technically feasible to recover energy from sludge. As renewable energy, it can be directly used for wastewater treatment, reducing the facility's dependency on conventional electricity. The greater the quantity of energy produced by the industry, the more the industry can help reduce emissions of greenhouse gases.

Using solids as a resource rather than a waste may help stressed public budgets as well. Wastewater solids must be processed prior to disposal, and solids handling accounts for as much as 30 percent of a wastewater treatment facility's costs.

According to "State of the Science Report: Energy and Resource Recovery from Sludge," published by the Global Water Research Coalition, converting solids to energy is feasible and desirable, from a treatment perspective. The challenge is finding a process that meets social, economic and environmental objectives, as well as being affordable and cost effective. For instance, chemical use may be required in certain processes, but it may not always be the best option in terms of health protection and life cycle impacts (energy use and emissions during production and transportation).

There are about 2,000 central sludge processing facilities in the U.S. As of 2004, 650 of those facilities used anaerobic digesters to process its sludge. When sludge is digested, it produces methane gas. The Water Environment Research Foundation developed the Life Cycle Assessment Manager for Energy Recovery (LCAMER) model to help wastewater agencies determine the feasibility of recovering energy from anaerobic digestion of wastewater solids.

Other examples of energy conversion:

- The city of Watsonville, California uses restaurant grease to increase sewage sludge digester gas production by over 50 percent.
- The use of methane as a source of hydrogen has been demonstrated at King County (WA) South Treatment Plant.
- In 2005 in the U.K., waste (including sewer sludge) combustion and biogas production accounted for 10.8 percent and 4.2 percent respectively of all UK renewable energy.
- A German plant produces excess energy. In 2005, an average of 113 percent of the electricity consumed in the operation of the plant was generated onsite by gas engines.
- A Swedish treatment plant produces and sells biogas to Stockholm's bus company, which uses it to run at least 30 buses.

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We have a chance to make our wastewater treatment plant produce all the energy it needs as we upgrade it.

- Stockholm's energy company uses heat recovery pumps to extract heat from treated sewage to provide hot water and heating to 80,000 apartments.

- The Sewerage Bureau of Tokyo Metropolitan Government turns dewatered sewage sludge into fuel charcoal for thermal power generation.

While the current technology is promising, none of the processes can fully extract all the energy available in wastewater. The exploration of new technological developments, or improvements of current

Source: Water Environment Research Foundation
Web site: <http://www.werf.org/>

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