# \*\*\* Energy Infrastructure \*\*\*

### NRG 1NC

#### Energy Infrastructure spending now

Environmental and Energy Study Institute ’12 (February, 2012, “Obama Administration FY 2013 Budget Proposal: Sustainable Energy and Transportation: Fact Sheet”, <http://files.eesi.org/budget_factsheet_022912.pdf>)

President Obama released his $3.8 trillion fiscal year (FY) 2013 budget proposal on February 13, 2012, which includes a continued emphasis on renewable energy and infrastructure spending. Obama called for an “all of the above” energy strategy during his State of the Union speech in January to grow the economy, create jobs and promote green technology development. The budget calls for an elimination of $4 billion in fossil fuel subsidies and a shift in funding from decreasing military actions in Iraq and Afghanistan to infrastructure projects. Clean energy and environment are important components and priorities of the FY 2013 budget request, which stresses developing new clean energy, advancing research and development funding for alternative energy, as well as promoting advanced manufacturing and jobs. Key agencies related to the President's clean energy goals are the Department of Energy, Department of Transportation, Department of Agriculture, Housing and Urban Development and Environmental Protection Agency.

#### Plan causes cuts in Energy Infrastructure

Hunter ’12 (Kathleen, columnist, February 16, 2012, “Obama Budget Doubles Infrastructure Funds While Cutting Programs”, Bloomberg, http://www.businessweek.com/news/2012-02-16/obama-budget-doubles-infrastructure-funds-while-cutting-programs.html)

President Barack Obama would almost double spending on the U.S. infrastructure over the next six years and would pour $350 billion into a jobs plan while reducing the budgets of most other domestic agencies. The blueprint for the fiscal 2013 budget released today would spend $476 billion through 2018 on highway, bridge and mass transit projects, funded in part by winding down the wars in Iraq and Afghanistan. It would cut some energy programs, farm subsidies and federal workers’ retirement plans, while bulking up the Securities and Exchange Commission and creating a panel to investigate unfair foreign trade practices.

#### Kills Economic Growth

Ryan ’12 (Rep. Paul Ryan, chairman of the budget committee, 2/15/12, “REP. PAUL D. RYAN HOLDS A HEARING ON THE PRESIDENT'S FY2013 BUDGET”, Budget hearing transcript)

Anyway, I want to take the next two-and-a-half minutes just to quickly ask you what I think is what is on the minds of most Americans, which is, how President Obama moves forward in the budget in making sure that we grow this economy, and we don't do anything to hurt this fragile economic growth. Maybe even more importantly, makes critical investments in the future, particularly in growth industries. So I wanted to just take a couple of minutes, if you would, to talk about the critical investments that are made, and everything from basic research on energy and life sciences, to investments in innovative industries and advanced manufacturing. These are growth industries in our nation. We're excited about the increase in manufacturing that's happening in this country, but this is so important, that the president is making clear investments in an innovative sector. He's going to create jobs for Americans right now and into the future. And if not done, could seriously hurt our economic growth in the future.

### A2 NRG Cuts Now

#### Even with cuts, Energy is still funded

Ryan ’12 (Rep. Paul Ryan, chairman of the budget committee, 2/15/12, “REP. PAUL D. RYAN HOLDS A HEARING ON THE PRESIDENT'S FY2013 BUDGET”, Budget hearing transcript)

Even as we achieve the deficit reduction, we continue to make key investments in priority areas. These include short-term measures for job growth totaling $354 billion; tax breaks for the middle class and small businesses amounting to $352 billion, and continued investment in our long-term priorities including education and job training for American workers; innovation in R&D, clean energy and infrastructure. We make these investments in a budget that abides by the very tight spending caps and makes hard tradeoffs.

### NRG Good – Econ

#### Diversification in energy investment is good for the economy and warming

Gardett ’12 (Peter, Managing Editor of AOL Energy, March 23, 2012, “In Energy, America's Economy Is Just 'Emerging'”, http://energy.aol.com/2012/03/23/in-energy-americas-economy-is-just-emerging/)

The potential for increased US production of oil from shale could also spark a reworking of the US oil distribution networks, a future that companies are planning for with new refinery and other infrastructure investments. Those changes makes the US energy sector more like that of large emerging economies in China and India, where growth in demand is already underpinning huge investment by companies and governments in new infrastructure. The US has an advantage over those countries in that it also has a deep pool of available capital and an innovative financial industry, Atlas Energy CEO Edward Cohen and Chesapeake Energy CEO Aubrey McClendon said at the ECO:nomics event. Infrastructure needs in the US can be met by a mixture of capital availability with the entrepreneurial approach of American energy companies, Cohen said: "That's one thing Wall Street can do." New natural gas infrastructure to serve emerging demand based on low prices for the fuel, including CNG stations for trucks and cars, is already being built in the US McClendon said. Exporting natural gas shale drilling technology, including hydraulic fracturing, to countries like India and China, is the fastest and best way to help them grow their economies and limit emissions, McClendon said. Chesapeake has signed partnerships with a number of foreign firms, including China's CNOOC. The focus on natural gas in the industry, reflected by a focus on the fuel's prospects in early sessions at the ECO:nomics conference, can be overdone from the generation sector perspective, Duke's Rogers said. With 30 to 40 year investment and operation timelines, electricity firms cannot afford to make a long bet on any one fuel type; diversification remains essential. "It is one of the biggest challenges we face; convincing regulators and consumers that we should build anything but natural gas generation," said Rogers. "I'm not going to put all my chips on any one technology."

#### Energy infrastructure loss leads to economic collapse

Mutualink ’10 (an affordable community-wide interoperable multi-media communications platform, “CRITICAL INFRASTRUCTURE AND KEY RESOURCES”, http://www.mutualink.net/PDF/Mutualink-Critical-Infrastructure-and-Key-Resources-NIPP-7-14-10.pdf)

ENERGY SECTOR The U.S. energy infrastructure fuels the economy of the 21st century. Without a stable energy supply, health and welfare is threatened and the U.S. economy cannot function. More than 80 percent of the country’s energy infrastructure is owned by the private sector. The energy infrastructure is divided into three interrelated segments: electricity, petroleum, and natural gas.

#### Energy is key to productivity, Africa proves

Isaksson ‘9 (Anders, Research and Statistics Branch of the Programme Coordination and Field Operations Division, “Energy Infrastructure and Industrial Development”, Unido, http://www.unido.org/fileadmin/user\_media/Publications/RSF\_DPR/WP122009\_Ebook.pdf)

Much of today’s prosperity rests on secure and stable access to energy. Without requisite energy infrastructure, modern production grinds to a halt, as can be witnessed in parts of the developing world. Africa is a case in point. For example, only one in four Africans has access to electricity. Yet, less than five per cent of the continent’s hydropower potential has been tapped. Evidence on the dependence on energy was also clear from the recent oil price peak in 2008, which spurred innovative activities to come up with alternative energy sources.

### NRG Good – Warming

#### Energy infrastructure is the best to stop emissions, including over transportation

Ferrier ’11 (Grant, president of Environmental Business international, “Energy, Water and Transportation Present Best Infrastructure Opportunities for Environmental Firms”, http://ebionline.org/updates/855-energy-water-and-transportation-present-best-infrastructure-opportunities-for-environmental-firms)

Energy infrastructure is the healthiest of five infrastructure segments reviewed by EBJ, with almost 90% of survey respondents rating its prospects for growth as good, strong, or very strong. Coal-fired power dominates in China, India, southeast Asia and South Africa. However, strides in renewable energy development worldwide are also giving rise to an exploding market for services supporting the build-out of generation, transmission and distribution infrastructure. Executives interviewed for this edition affirmed the strength of power transmission market in the United States, reporting not only pent-up demand due to the need to upgrade the aging national grid, but also strong demand for connecting new renewable resources to the grid. "Power markets appear to have the most promise for environmental firms, and global prospects are good, although volatility in policy and source mix make power a challenging business for consulting engineers, equipment suppliers and other service providers," said EBJ Senior Editor George Stubbs. "By contrast, the water/wastewater and transportation infrastructure markets-particularly in the United States-suffer from funding shortfalls in spite of a substantial need for expansion and upgrade."

# \*\*\* Water Infrastructure \*\*\*

### 1NC

## Uniqueness

### Water

#### Funding is shaky – proposed increases and shifted focus on the horizon

**NSAC 12** (National sustainable agriculture coalition, “President’s proposed EPA budget and agriculture,” Feb 17 2012, http://sustainableagriculture.net/blog/fy2013-epa-budget-request/)

President **Obama’s**[**FY2013 EPA budget proposal**](http://www.epa.gov/planandbudget/annualplan/fy2013.html)**targets nutrient pollution, sedimentation and loss of shoreline vegetation as major water quality concerns, with a focus on agriculture as a major contributor to water degradation**.  To address this problem, the proposal directs USDA and EPA to **increase their coordination using Clean Water Act** Section 319 nonpoint source grants **and USDA’s Farm Bill conservation programs** in high priority watersheds to address agricultural nonpoint source pollution.  The proposal emphasizes this coordinated approach in dealing with nitrogen and phosphorus loading in the Mississippi River Basin. In addition, one of the two EPA priority goals for FY 2012-2013 is **to improve, restore or maintain water quality by enhancing nonpoint source program accountability, incentives, and effectiveness**.  The agency plans to release new Section 319 grant guidelines in November 2012 and to require that 50 percent of the states revise their nonpoint sources programs according **to the new guidelines by November 2013. The budget proposal also includes a total of $265 million for the Clean Water Act** Section 106 water pollution control grants to the states, **an increase of $27 million** over funding provided in FY2012.  Of that increased amount, $15 million would designated for states that commit to strengthening their nutrient management efforts consistent with EPA Office of Water guidance issued in March 2011. EPA regional water quality programs also provide funds for dealing with nonpoint source agriculture pollution.   Both **the Chesapeake Bay Program and the Great Lakes Restoration Program are provided with additional funding** in the budget proposal.  The Great Lakes Restoration Program funding increases by a modest $480,000 to a total of $300 million.  The Chesapeake Bay Program receives an increase in the proposal of $15 million to a total in FY2013 of $73 million.  **Most of the other geographic programs are targeted for funding cuts**, including the Puget Sound, South Florida, Long Island Sound, Gulf of Mexico, and Lake Champlain Programs. **The Drinking Water State Revolving Fund and Clean Water State Revolving Fund receive the most significant cuts to water programs in the proposal.  Total funding is decreased** from $2.38 billion in FY2012 to $2 billion in the budget proposal.  The Clean Water State Revolving fund would be cut $0.291 billion, receiving $1.175 billion and the Drinking Water State Revolving Fund would be cut $68 million from FY 2012 levels to $850 million.  **These programs provide funds to states to capitalize their own revolving funds, which in turn provide loans to support improvements in** municipal wastewater and drinking **water systems.**

#### Federal funding for water programs low – budget constraints

AR 12 (American Rivers, journal on funding and protection for rivers, “Clean water infrastructure funding,” updated 2012, [**http://www.americanrivers.org/our-work/clean-water/sewage-and-stormwater/investing-smarter-in.html**](http://www.americanrivers.org/our-work/clean-water/sewage-and-stormwater/investing-smarter-in.html))

Clean Water State Revolving Fund – The **main source of federal funding** is the federal Clean Water State Revolving Fund (SRF). In recent years, funding for the Clean Water State Revolving Fund **has declined sharply due to federal budget constraints and the fact that its authorization has expired with funding down from $1.35 billion a year to $689 million** in the FY08 budget. Because the Federal Clean Water State Revolving Fund is the major federal source for wastewater infrastructure**, we advocate reauthorization** of the SRF incorporating the above principles **as well as restoration of funding** to [$2 billion annually](http://www.americanrivers.org/assets/pdfs/river-budget/FY_09_River_Budget__Congress_2493.pdf) (PDF).

#### Stimulus funding for water infrastructure high – but needs more

**Garner 10** (Ryan, Journal: Institutional investment in infrastructure, “Demand grows for clean and safe water,” Jan 2010, ftp://ftp.igsb.uiowa.edu/.../ ...**)**

William Brennan, co-manager of the Kinetics Water Infrastructure Advantaged Fund, estimates that **$13.9 billion of the Obama Administration’s stimulus package has been put toward overhauling water infrastructure and other water-related activities. However, the United States is roughly $600 billion behind in revamping water pipes** and sanitation systems, and Brennan estimates that **70 percent of the 2 million miles of under- ground water pipes in the United States are beyond their useful life and need to be replaced. “There is a lot of stimulus spending lined up with regard to pipes, pumps and desalinization**,” says Brennan, who is also the president and managing partner of AquaTerra Asset Management. “**It will have an impact, but we believe it is just a Band-Aid when major surgery is required. The federal stimulus was meant to spur job growth, but it has really failed when it comes to water, and I think you’ll see more and more dollars allotted to rebuilding infrastructure** as we move forward.”

### Chopping Block: Water

#### Our water infrastructure is old, needs funding but on the chopping block now

**Wymen 12** (Eben, Journal: Alternative financing tools to water infrastructure, “public benefit through the private sector,” 2012, www.uimonline.com/downloads/uim-financing-tools.pdf)

A system of outdated pipes delivers water to our homes and businesses. Given **the age of our water infrastructure network, it is no surprise that pipes break every day across our country, resulting in traffic delays, boil water alerts, environmental damage, lost productivity, and even fatalities**. The astonishing part is that **we willfully continue to neglect** one of **our** nation’s greatest **resources** — clean water. Unfortunately, **in the current budget** situa- tion, all federal programs, including **water infrastructure investments, are on the chopping block.** Consequently**, we must** look to innovative financing mechanisms to **ensure that water infrastructure projects continue**. Reps. Geoff Davis (R-Ky.) and Bill Pascrell (D-N.J.) and Sens. Robert Menendez (D-N.J.) and Mike Crapo (R-Idaho) have introduced bipartisan legislation that leverages private- sector investment to put people back to work, create economic growth and rebuild our deteriorating water systems**. The Sustainable Water Infrastructure Investment Act** (H.R. 1802, S. 939) **would remove the state volume cap** on private activity bonds (PABs) -- or exempt facility bonds **-- that fund water** and wastewater **infrastructure projects.** Removing the PAB volume cap will increase private invest- ment in water infrastructure **to address years of underfunding.** According to estimates, **the legislation could gen- erate as much as $5 billion annu- ally in incremental private capital for water infrastructure projects with a nominal cost to the federal government**. The broad reach of water infrastructure investment cannot be overstated. A 2008 Associated Equipment Distributors (AED)- National Utility Contractors Association (NUCA) study found that on average, at least 12 percent of a water utility project bid is attributable to the purchase, rental, leas- ing and dealer repair of construction equip- ment. AED estimates that the Sustainable Water Infrastructure Investment Act will pro- vide equipment distributors $600 million annually in market opportunity — a significant boost to an industry that has struggled to recover from the recession**. The bang for your buck from water infra- structure investment goes beyond the con- struction sector**. In fact, according to a recent study by the Clean Water Council, of which AED is a member, a $1 billion national investment supports 20,000 to 26,669 jobs. These **opportunities are spread across the economy with nearly half the jobs in industries other than water** and wastewater construction, demonstrat- ing the broad reach of water infrastructure investment.

#### Water infrastructure programs up for cuts

**Wymen 12** (Eben, Journal: Alternative financing tools to water infrastructure, “public benefit through the private sector,” 2012, www.uimonline.com/downloads/uim-financing-tools.pdf)

The need to invest in America’s underground environmental infrastructure is well known and clearly documented. Accordingto the Environmental Protection Agency (EPA) **hundreds of bil- lions of dollars will be needed over the next 20 years** to address America’s wastewater and drink- ing water infrastructure improvements**. At the same time, federal financing for these critical infrastructure projects has been sig- nificantly reduced** over the past several years. **For example, EPA’s Clean Water and Drinking Water State Revolving Fund** (SRF) **programs have been decimated. After absorbing a nearly $1 billion cut in this year’s “continuing resolution,” the** SRF **pro- grams are on the chopping block again** in Fiscal Year 2012. **At a time when financing needs are skyrocketing, construction firms continue to close their doors, the municipal bond market remains in turmoil as public dollars are pared back**, innovative **financing** and significant opportunities for participation from the private sector are **needed now more than ever.**

## Link

### Links: Water

#### Trades off with funding for water infrastructure

**AP 12** (Maury Thompson @ Assocciated Press, Feb 9 12, “Federal funds needed for local water,” http://www.nyruralwater.org/news/?p=395)

**A federal study shows New York needs $29.7 billion in upgrades to long-overlooked water and sewer systems.** U.S. Sen. Charles Schumer, D-N.Y., said Wednesday **the study shows how important it is to continue funding levels for the Clean Water State Revolving Fund Program, which makes federal funding available to states to finance municipal water and sewer projects. Some in Congress have been advocating to redirect funding from the program to other types of infrastructure needs**, Schumer said in a prepared statement. “New York has some of the oldest sewer and water systems in the country, and **they desperately must be repaired and upgraded**,” Schumer said. Even with the current level of funding, many projects go without financing, said Glens Falls Councilman-at-Large Dan Hall. **The city and other municipalities have projects that qualify for funding, but the state does not have funding left to distribute**, he said. “**You can be on the list. But if there’s no money, there’s nothing you can do**,” he said. According to Schumer’s office, a federal Environmental Protection Agency study estimates $29.7 billion is needed for 719 projects in New York. Of that, $96.4 million is needed for 13 projects in Warren County, and about $110 million is needed for 13 projects in Washington County. About $123.2 million is needed for 12 projects in Saratoga County, and about $99.9 million is needed for 15 projects in Essex County. Another $4.6 million is needed for three projects in Hamilton County.

#### Transit and water dollars come from the same pocket

Copeland 03 (Claudia, specialist in resources and environment policy, CRS, “Water infrastructure needs and investment,” 12.21.2010, www.fas.org/sgp/crs/homesec/RL31116.pdf)

**Congress has on many occasions enacted legislation affecting one or more infrastructure categories, such as surface transportation or water resources**, but has rarely done so comprehensively. During the 1980s debate about deteriorating public works systems, Congress did enact a bill that established a National Council on Public Works Improvement with a mandate to analyze and report to Congress and the President on the state of public works infrastructure systems (P.L. 98-501). Title II of that act directed the President to submit certain budgetary information on public civilian and military capital investment programs in the annual budget transmittal. The coverage of this analysis was to be broad. **According to the legislation, it was to include “any physical asset that is capable of being used to produce services or other benefits for a number of years” and was to include but not be limited to “roadways or bridges; airports or airway facilities; mass transportation systems; wastewater treatment or related facilities; water resources projects; hospitals; resource recovery facilities; public buildings; space or communication facilities; railroads; and federally assisted housing.”**34 The Council established by P.L. 98-501 provided yet **another definition of infrastructure and included nine categories** of systems in its analyses: **highways, streets, roads, and bridges; airports and airways; public transit; intermodal transportation (the interface between modes); water supply; wastewater treatment; water resources; solid waste; and hazardous waste services. These categories**, the Council said, have strong links to economic development and **generally have a tradition of public sector involvement. Facilities have high fixed costs** and long economic lives. **Taken as a whole,** according to the Council, the services that they provide “form the underpinnings of the nation’s defense, a strong economy, and our health and safety.”35

### Water Key

#### Prioritization of water infrastructure key – must shift infrastructure funding focus

**AR 12** (American Rivers, journal on funding and protection for rivers, “Clean water infrastructure funding,” updated 2012, [**http://www.americanrivers.org/our-work/clean-water/sewage-and-stormwater/investing-smarter-in.html**](http://www.americanrivers.org/our-work/clean-water/sewage-and-stormwater/investing-smarter-in.html))

**There is an immediate need to significantly reinvest in repairing and replacing America’s traditional water** and wastewater **infrastructure**. The [Environmental Protection Agency](http://www.epa.gov/safewater/gapreport.pdf) estimates that **the nation must invest $390 billion over a 20 year period** to update or replace existing wastewater systems **or risk having water quality regress to mid-1970s pollution levels**. American Rivers is working at all levels to ensure that we [use our infrastructure funding more wisely](http://www.americanrivers.org/our-work/clean-water/sewage-and-stormwater/clean-water-infrastructure-1.html) by encouraging smart, 21st century approaches that will more effectively protect clean and safe water into the future. Such **sustainable approaches use green infrastructure, water efficiency, and reuse to complement and extend the life of traditional infrastructure** and often require less money while providing greater environmental and community benefits, including green jobs, reduced flooding, temperatures and energy costs, and community beautification. Already, green infrastructure is being used [successfully by a number of cities around the country](http://cfpub.epa.gov/npdes/greeninfrastructure/gicasestudies.cfm#Municipal), and interest **continues to grow as communities recognize the multiple benefits of using cost-effective techniques such as rain gardens, green roofs, and permeable pavement to manage stormwater on-site, reducing the need for expensive, hard infrastructure projects and stretching scarce dollars further. Now we must build on these successes and institutionalize these practices, in part by prioritizing them in our funding mechanisms.**

#### Focus on water infrastructure key – funding gets spread too thin

Copeland 10(Claudia, specialist in resources and environment policy, CRS, “Water infrastructure needs and investment,” 12.21.2010, www.fas.org/sgp/crs/homesec/RL31116.pdf)

**Legislative proposals** (including H.R. 1262 and S. 1005 in the 111th Congress) **would have added a number of new types of projects** to those already eligible for SRF assistance: water conservation; water reuse, reclamation, or recycling; measures to increase facility security; and implementation of source water protection plans, for example. More recently, there has been growing interest, as well, in “green” infrastructure, such as projects that treat or minimize sewage or urban stormwater discharges using nonstructural approaches, stream buffers, wetland restoration, or low-impact development technologies. **The rationale for using federal assistance is that investments in some of these approaches could reduce overall needs for capital investment.** All, arguably, could benefit water quality protection and improvement, as do traditional infrastructure investments, and supporting them through the popular mechanism of SRFs would help ensure comparatively secure funding. **But expanding the scope of eligibility also arguably dilutes the current focus of these programs, at a time when traditional needs remain high. This tension already exists with the wide range of set-asides** authorized under the drinking water SRF, **where, in addition to funding infrastructure projects, states may reserve up to 31% of their federal capitalization grant for a range of other purposes**.

#### Water infrastructure is falling apart – must prioritize it over other infrastructure

**Garner 10** (Ryan, Journal: Institutional investment in infrastructure, “Demand grows for clean and safe water,” Jan 2010, ftp://ftp.igsb.uiowa.edu/.../ ...**)**

**If only our infrastructure problems were restricted to our roads and highways. Too many American cities now rely on a decaying grid of old and overworked pipes that verge on collapse. Baltimore**, for example, **has suffered more than 5,000 water pipe breaks in just the last four years**. Meanwhile, EPA estimates suggest that **more than $183 billion is needed for installation and maintenance of safe drinking water systems through 2022. And when we consider the requisite infrastructure base of the emerging green and information economies, we fare little better.** Electric utilities will need to invest an annual average of $28 billion for generation, $12 billion for transmission, and $34 billion for distribution of electricity to keep pace with demand. And according to the Organization for Economic Cooperation and Development (OECD), the United States ranks 15th in the world in access to broadband, the conduit by which commerce increasingly flows. Fifteenth! And if we are not careful, we could fall even lower. Our friends and competitors around the world understand the critical importance of infrastructure to economic growth, and they have invested accordingly. China puts 9 percent of its GDP into infrastructure, India 5 percent and rising. In America, we spend less than 2 percent of GDP. For these reasons and many more, **we must reprioritize** public investment and begin the rebuilding of our national **infrastructure.** For every $1 billion spent on transportation projects, 47,500 jobs that cannot be outsourced are created and $6.2 billion in economic activity is generated. So, **thinking long-term about our infrastructure problem would pay very real short-term dividends** for our labor market troubles as well.

## Bioterror

### Water Investment Key

#### Sufficient water security now, but more resources needed

Lawley 11 (Mark, Associate Professor of Industrial Engineering at Purdue University, “Allocating security resources to a water supply network,” IIE transactions, Apr 7 11, http://www.tandfonline.com/doi/full/10.1080/07408170600865400)

**The President's Commission on Critical Infrastructure Protection identified eight key infrastructures** that provide essential services to our society (PPD 63, 1998). They are: (i) **energy systems;** (ii) **telecommunications**; (iii**) water supply**; (iv) **transportation**; (v) **banking**; (vi) **finance**; (vii) **government**; and (viii) **the emergency services. These systems constitute the “lifelines” of our civilization. Our economic prosperity and social well being is jeopardized** when they are damaged, disrupted, or unable to function at adequate capacity. **The US water infrastructure system is a major national asset** valued at approximately $675 billion ([Grigg, 1999](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0020#CIT0020)). **In recent years, the federal government has promoted risk assessment analysis of water systems, disaster response training for water facility personnel, and research aimed at improving attack detection and mitigation** ([Ostfeld and Salomons, 2004](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0033#CIT0033)). Most approaches have been highly subjective and qualitative, **with** relatively few quantitative methods being developed or proposed. Furthermore, **most approaches focus on assessment and evaluation rather than security enhancement**. In contrast**, this research develops a quantitative method that allocates security resources to water distribution networks to maximize resilience to intentional attacks.**

#### Inadequate funding risks physical, cyber or chemical attack on water infrastructure

Lawley 11 (Mark, Associate Professor of Industrial Engineering at Purdue University, “Allocating security resources to a water supply network,” IIE transactions, Apr 7 11, http://www.tandfonline.com/doi/full/10.1080/07408170600865400)

**An intentional attack on the water infrastructure** can be classified into one of three categories: (i) **physical**; (ii) **cyber; and** (iii) **chemical/biological** ([Haimes](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0023#CIT0023)*[et al](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0023#CIT0023)*[., 1998](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0023#CIT0023)). Physical attacks **target pipes, pumping stations, water tanks, and other facilities. A successful physical attack will alter the system by destroying or degrading part of the network. Since water flow is governed by nonlinear hydraulic laws, the destruction of a well-selected set of components can easily cause far-reaching hydraulic infeasibilities that result in catastrophic disruption of the water service**. Cyber attacks target the Supervisory Control and Data Acquisition system, which is the information management system for the water infrastructure, with the aim of corrupting data and damaging computers. Chemical/biochemical attacks use the water network to spread life-threatening chemical or biological agents. **Chemical and biological attack scenarios are the most feared threat to the water infrastructure because they can result in major public health crises, economic impacts, and long-lasting psychological effects**. However**, physical attack scenarios that destroy or disrupt a water system's components are far more likely because explosive materials are readily available and require a lower level of expertise compared to the development and deployment of contaminants** ([Burns *et al*., 2002](http://www.tandfonline.com/doi/full/10.1080/07408170600865400#CIT0012#CIT0012);[Murray](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0031#CIT0031)*[et al](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0031#CIT0031)*[., 2004](http://www.tandfonline.com/doi/full/10.1080/07408170600865400" \l "CIT0031#CIT0031)).

#### Only better funding can solve bioterror attack on water supply – greater security and tools are a necessity to prevent damage to public health

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

**In addition to providing** potable **drinking water, U.S. water systems are critical to the maintenance of many vital public services**, such as fire suppression and power generation**. Disruption of these systems would produce severe public health and safety risks, as well as considerable economic losses.** Thus**, water systems have been designated as critical to national security** by the U.S. government. **Previous outbreaks of waterborne disease have demonstrated the vulnerability of both the water supply and the public’s health to biological contamination of drinking water. Such experiences suggest that a biological attack, or** even a credible threat of an attack**, on water infrastructure could seriously jeopardize the public’s health, its confidence, and the economic vitality of a community. Despite these recognized vulnerabilities, protecting water supplies from a deliberate biological attack has not been sufficiently addressed. Action in this area has suffered from** a lack of scientific understanding of the true vulnerability of water supplies to intentional contamination with bioweapons, **insufficient tools for detecting biological agents, and a lack of funds to implement security improvements. Much of what is needed to address the vulnerability of the national water supply falls outside the influence of individual utilities. This includes developing a national research agenda to appropriately identify and characterize waterborne threats and making funds available to implement security improvements.**

### Funding Key

#### Increased funding key – insufficient resources have been failing

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

**Although there has been some federal activity** in creating a national research agenda, **recent analyses of these activities have revealed gaps.** The EPA’s Water Security Research and Technical Support Action Plan identified critical research needs and created a plan for addressing those needs. However, a National Research Council (NRC) panel evaluation of EPA’s Plan identified critical gaps in the scope of the research plan and suggested alternative priorities for EPA to pursue. Furthermore, the NRC panel criticized the plan’s **failure to address the financial resources required to complete the research and to implement needed countermeasures to improve water security**.2,44 The EPA’s Office of Inspector General (OIG) also has been critical of the agency’s research activity, citing **failure to use information from completed vulnerability assessments to identify water security research needs.** The OIG report included the following quote from a member of the National Research Council panel that reviewed EPA’s research plan: **The vulnerability assessments provide information that could provide guidance. It will provide EPA an opportunity to address vulnerabilities instead of guessing what they are. It will provide assurance that all that needs to be considered have been considered or we risk leaving our self at risk.**Access to the vulnerability assessments would strengthen whatever plan is developed.45 Information contained in vulnerability assessments should be used to identify and prioritize research needs.

### Bioterror = Extinction

#### Bioterror causes extinction

**Steinbrunner 97** (John, Senior Fellow – Brookings, Foreign Policy, 12-22, Lexis)

Although human pathogens are often lumped with nuclear explosives and lethal chemicals as potential weapons of mass destruction, there is an obvious, fundamentally important difference: Pathogens are alive, weapons are not. Nuclear and chemical weapons do not reproduce themselves and do not independently engage in adaptive behavior; pathogens do both of these things. That deceptively simple observation has immense implications. The use of a manufactured weapon is a singular event. Most of the damage occurs immediately. The aftereffects, whatever they may be, decay rapidly over time and distance in a reasonably predictable manner. Even before a nuclear warhead is detonated, for instance, it is possible to estimate the extent of the subsequent damage and the likely level of radioactive fallout. Such predictability is an essential component for tactical military planning. **The use of a pathogen,** by contrast, is an extended process whose scope and timing **cannot be** precisely **controlled**. For most potential biological agents, the predominant drawback is that they would not act swiftly or decisively enough to be an effective weapon. But for a few pathogens - ones most likely to have a decisive effect and therefore the ones most likely to be contemplated for deliberately hostile use - the risk runs in the other direction. **A lethal pathogen that could efficiently spread from one victim to another would be capable of initiating an intensifying cascade of disease that might** **ultimately threaten the entire world population. The 1918 influenza epidemic demonstrated the potential for a global contagion of this sort** but not necessarily its outer limit.

### A2 Contained

#### Biological or chemical attacks on water cause massive outbreaks – Wisconsin proves

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

**Drinking water could be intentionally contaminated at the original water source** (e.g., a lake or reservoir), **during treatment, in pipes that distribute water to points of use, or in storage containers. Water systems could be intentionally compromised through biological (or chemical or radiological) contamination or through physical damage to the treatment or supply infrastructure. In addition to biological attacks, water supplies could be disrupted through cyber attacks on computerized operations that control delivery and treatment**, or through interruption of interdependent activities, such as transportation of chemical disinfectants or electricity for pumping. Although utilities will have to consider all of these threats, this article focuses on the possibility of a biological attack on water supplies.There is evidence to suggest that **drinking water could be a vehicle for intentional contamination with a biological agent** (microbe and biotoxin). **Many** Category A and B **biological agents are** believed or known to be **transmissible by water.** According to one list developed by the U.S. Army, of 18 organisms and 9 biotoxins that may be used as biological weapons, 44% and 89%, respectively, have been identified as water threats.18 Another 28% of biological organisms and 11% of biotoxins are considered probable water threats. Several **waterborne pathogens and toxins are known to be stable in water for long periods and are resistant to commonly employed disinfection methods.** Moreover, **the ability of waterborne pathogens to cause massive outbreaks has been demonstrated. In 1993, a huge outbreak of cryptosporidiosis occurred in** Milwaukee, **Wisconsin**. *Cryptosporidium* **organisms passed undetected through two water treatment plants and are estimated to have caused more than 403,000 illnesses and 4,400 hospitalizations among the 800,000 customers served by the water system**.19 **Although this incident was not the result of bioterrorism, it demonstrated to public health professionals the vulnerabilities of populations to microbial contamination of treated water supplies**. *Cryptosporidium* was first identified in 1907, but it was not recognized as a source of waterborne disease until 1987 when it was associated with **a 15,000-person outbreak in a filtered system in Georgia**.20 This **suggests that there is much work to be done** in improving our understanding of drinking water as a source of community illness.

### A2 No Attack

#### Bioterror via water infrastructure is a real threat – empirics

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

It has long been recognized that among the public utilities, **water supply facilities offer a particularly vulnerable point of attack to the foreign agent, due to the strategic position they occupy in keeping the wheels of industry turning and in preserving the health and morale of the American Populace**.**2Recent threats to the U.S. water supply have been documented. In** January **2001, the FBI warned U.S. water utilities of a threat from a “very credible, well funded, North Africa-based terrorist group” to “disrupt water operations in 28 U.S. cities.”**9**In** July **2002, following the acquisition of Al Qaeda documents that included detailed maps of several U.S. public water systems, the FBI warned of possible terrorist attacks against American targets and specifically advised the nation’s water utilities to prepare for attacks on pumping stations and pipes that deliver water to consumers**.**10 In 2003**, when the national alert status was elevated to “high risk,” **the** Centers for Disease Control and Prevention **(CDC) and EPA** issued a health advisory via the CDC’s Health Alert Network (HAN) that **recommended increased vigilance by the public health community and water utilities regarding the possibility of a terrorist attack on water supplies**.11 Later, **in 2004, the FBI** and DHS **issued a** four-page **bulletin to** law enforcement agencies and **water utilities that detailed a plot by unnamed terrorists to inject poison into the water supply** during chlorination. The bulletin **suggested that terrorists were interested in recruiting water utility insiders to carry out the plot**.12 **There have been additional threats to the water supply that have not received widespread media attention. A 2003 report commissioned by the American Water Works Association Research Foundation queried water utilities, government agencies, and established terrorism incident databases and found more than 100 cases of actual, threatened, and disrupted plots to contaminate water supplies.**

#### Even a threatened attack causes mass paranoia and political repercussion

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

An important consideration regarding the strategic importance of the U.S. water supply is that **the national water infrastructure affects every single U.S. citizen. Without an effective government response and proper management, an attack on a U.S. water supply could have an economic impact and cause a loss of public confidence not only in the affected system, but also in water supply systems throughout the country.** **Maintaining consumer confidence is an ongoing challenge for the water industry, even without having experienced an attack.** The 1999 nationwide survey by the National Environmental Education & Training Foundation found that 65% of Americans either take additional steps to treat their drinking water or drink bottled water in their homes. Moreover, some 24% of Americans reported that they do not drink tap water at all.26 The study authors concluded that, **despite the fact that U.S. water companies and utilities maintain some of the highest quality public drinking water in the world, many consumers are wary of tap water. Given the challenges already facing the industry, an attack on one portion of the water supply could further erode public confidence in the safety of drinking water as a whole. Contamination events can result in political repercussions at all levels of government. In 2000, an outbreak of E. coli** 0157 and Campylobacter occurred in Walkerton, Ontario, when **improperly treated water was pumped to taps throughout town and sickened more than 2,000 people**. Although the individual water operators were convicted of criminal charges (for falsifying water treatment reports), a public inquiry also placed blame on the provincial government. In particular, the report criticized Ontario’s privatization of water quality testing as failing to provide adequate oversight to ensure water safety: “**If the Ministry of Environment had adequately fulfilled its regulatory and oversight role, the tragedy in Walkerton would have been prevented...or...reduced in scope.”**27 Following the inquiry, **an outraged public held its political leaders accountable**: In the next provincial election, the opposition party won majority control in Ontario, partially campaigning on safe drinking water.28 **Water supplies do not actually have to be contaminated for disruption to occur. Given the lack of diagnostic tools to rapidly and reliably rule out a threat of contamination, hoaxes or threatened incidents of contamination can pose considerable management and response challenges for water utilities and political leaders**. One example was in the Village of Orwell, Ohio, which received a generic threat against its water supply just before the 2004 Thanksgiving weekend.29 In the interest of safety, the local leaders made the decision to advise citizens not to use their tap water for consumption while the incident was being investigated; it was ultimately determined to be a hoax. The do-not-use order lasted through the holiday weekend. To ensure that the Village’s thousand or so residents received the notice, Village employees directly contacted every home in the affected area via phone or by paper notice if they were not able to reach a household by phone (Village of Orwell, Ohio, Water/Sewer Department; personal communication). This single incident demonstrates the considerable amount of resources that hoaxes can demand even in small communities.

## Agriculture

### Investment K2 Ag

#### Federal investment in conserving aquifers key – arid agriculture areas will run out of water

**MIT 12** (Michigan Institute of Technology, “Mission 2012: Clean water,” updated 2012, <http://web.mit.edu/12.000/www/m2012/finalwebsite/solution/groundwater.shtml>)

**Our solution has four main aspects: Upgrade current public policy to reflect the scarcity of groundwater** and implement a cap-and-trade system for groundwater **Introduce effluent water as an artificial source of aquifer recharge Raise the standards of all current conservation programs** and integrate these current programs with regional watershed commissions based on local projects **Implement a Permit System for groundwater pollutants** More details about these four points can be found below. Public Policy Recommendations Our public policy plan for limiting groundwater depletion centers on the following five points: **Establish policies that will lead to sustainable levels of groundwater production. Enact laws with the aim of decreasing the rate of groundwater depletion. Implement a cap-and-trade system for groundwater that will factor in the depth of the water tables at all pumping sites. Increase monitoring of all aquifers tapped by major production wells** at local and state levels, **with monitoring and oversight** by the United States Geological Survey (USGS). **Create aquifer-scale watershed commissions to help implement and oversee these changes and collaborate with existing water authorities**. In recommending public policies for groundwater, we will use the Ogallala Aquifer as a case study. However, all of our proposed solutions can be used as a template and applied to other aquifers as well. Some Background **The Ogallala Aquifer is one of the largest in the U.S. and plays a critical role in the production of food. Most of the water in the aquifer dates back to a much wetter climate**, ca 10,000 years ago. **In today's relatively arid climate in the western U.S., recharge rates are extremely low** and with growing populations, the pressure on the Ogallala Aquifer is great. While it is impossible to not deplete or mine this fossil water**, policies must be implemented that prolong the lifetime of the aquifer**. In the Ogallala region, **policies that seek to balance the wellbeing of farmers, residents, and the future of the aquifer as a whole system is lacking**; regulations are different in each state**. This lack of an overarching perspective is ineffective** since the Ogallala Aquifer is on track to be completely depleted. Currently, regulations are implemented at a local or state level. While the federal government does set standards through the Environmental Protection Agency (EPA), USGS, and (United States Department of Agriculture) USDA, these federal regulations are often met and surpassed by state regulations (Purdue Research Foundation, 1996). While state regulation is not necessarily ineffective, the scope of regulation is limited since each state only considers the groundwater within its boundaries. The Ogallala Aquifer exists beneath many states and must be considered as an integrated system. **Each state has a rather lenient system governing how much water can be produced from the aquifer**. For example, **Kansas, Nebraska, New Mexico, and Wyoming never set an absolute limit** for the amount of water that can be withdrawn from the Ogallala Aquifer. The strictest regulations that are currently in place state that one cannot obtain a permit if pumping at that site will deplete the surrounding aquifer area by a specified amount, which varies by region. **Colorado, Oklahoma, South Dakota, and Texas** are some such states that do set numerical limits to groundwater withdrawals; however, all of these policies **accept the fact of ultimate groundwater depletion, and thus must implicitly accept the problems associated with future lack of water in an important agricultural region**. For more information about current public policies regarding the Ogallala, please [click here](http://web.mit.edu/12.000/www/m2012/finalwebsite/problem/groundwater.shtml#publicpolicy). While these policies are a good start, and are better than no regulation at all**, higher standards are needed** to limit and decrease groundwater depletion. Also, **an overseeing organization is needed** to look at the overall effects of each state's depletion and to implement our [proposed cap-and-trade system](http://web.mit.edu/12.000/www/m2012/finalwebsite/solution/econ.shtml#Economics-capandtrade)**. A more centralized system** that examines problems at both the local level and on a broader, aquifer scale must **be implemented if the Ogallala Aquifer is to be a sustainable water resource**. Raising Standards We propose to reduce depletion rates for all states. In the past, regulations have allowed individuals to withdraw "a reasonable amount of the groundwater under their land for beneficial use on that land" (McGuire, Johnson, Schieffer, Stanton, Sebree, and Verstraeten, 2000, 40) as is the case in Nebraska. **Policies that treat groundwater in the major aquifers of western North America as a non renewable resource must be implemented**.

### Investment K2 Stop Overuse

#### Federal funding for water key to prevent overuse

**MIT 12** (Michigan Institute of Technology, “Mission 2012: Clean water,” updated 2012, <http://web.mit.edu/12.000/www/m2012/finalwebsite/solution/groundwater.shtml>)

**To effectively deal with the water crisis, centralized federal control of the water resources is needed. The government should be responsible for determining the sharing of water since they can direct it to areas where it could be most productively used.** In order to most effectively address the water needs of individual areas, irrigation districts should be established with boundaries decided by minor watersheds, as is already the case in many parts of the country. Each board will consist of representatives of every group concerned with the water (farmers who irrigate, municipalities, industries, fisheries, conservationists) and will **be responsible for local water issues, such as sources of water, operation and maintenance of water use /conservation schemes and funding** of said schemes. **A system of full time employees will also be required to deal with day to day running of administration.** Each board will be open to the public and encourage public involvement; newsletters will keep districts updated on each others' plans (Johnston, 1987).The following basic federal guidelines will govern the operation of irrigation districts. The **government will not provide subsidized water to areas since it encourages farmers to over use water. Users of federally supplied water will instead pay more to match the cost of supply**. The government should also be careful about allowing irrigation districts to borrow large amounts of money for district projects and require a thorough investigation into their repayment abilities before approving loans, decreasing the likelihood of ineffective projects being put into place. Basic water qualities standards will be set by the government. **As competition for water increases, users will require either a historic right to the water or a licensed contract for the water. Few new major projects are likely to be built due to the high cost, new knowledge about environmental degradation and the fact that the most justifiable ones have already been built** (Johnston, 1987).

#### Federal investment and research into groundwater conservation key

**MIT 12** (Michigan Institute of Technology, “Mission 2012: Clean water,” updated 2012, <http://web.mit.edu/12.000/www/m2012/finalwebsite/solution/groundwater.shtml>)

For example, Wetlands Reserve Program still reserves the power to determine, which areas are eligible for wetlands restoration. In addition**, federal programs** also **need to set long-term goals** for itself, as a program. It also **needs to be able to measure and quantify its progress**. This can provide an accurate measure on how to further improve its performance. **Federal programs should** also prioritize areas of concerns. By prioritizing certain areas of concern, federal programs would be able to **focus its resources on a certain region and produce more results, as compared to spreading its resources among various different areas.** Thus, federal programs need to collaborate with local water commissions on projects, and increase its standards by setting long-term goals, measure its progress and prioritize.**In addition to streamlining federal programs, there needs to be increased research in aquifer ecosystems. These ecosystems are relatively unknown, and needs to be extensively studied in the near future, so that we can better understand the implications of groundwater depletion** and contaminations on such ecosystems. Also, further **research will be able to enable us to better predict the consequences of degrading aquifer ecosystems on human society**.

### Funding K2 Stop Overpumping

#### Federally funded programs key to prevent overpumping in semi-Arid America

**Cowen 11** (@ UC Davis, May 2011, “Chapter eighteen: mining water,” UC Davis, http://mygeologypage.ucdavis.edu/cowen/~gel115/115CH18miningwater.html)

**The Arizona Groundwater Management Act was passed under pressure from the Federal Government in 1980 after it became clear that Arizona law could not prevent overpumping of ground water.** **The new law was necessary if the State was to survive another century of ground-water mismanagement. The first provision was to require the State to set up a State Department of Water Resources** for the first time! The Act **also set up** four AMAs (Active Management **Areas) in the regions worst affected by groundwater overdrafts** (including the Phoenix, Tucson, and Prescott areas). In AMAs, ground-water overdrafts **had to be cut to zero by 2025. For many communities, this can be achieved by slow growth and strict water management**. But Tucson (as well as Phoenix) has already outgrown any conceivable way to meet the goals of the Act without massive water imports, and present growth projections suggest that the local population in the two major Arizona metropolitan areas will double at least by 2025. Even some of the apparently obvious ways to reclaim used water are not available: for example, experiments to use municipal sewage for irrigation caused increased levels of nitrate in the groundwater. **The Federally funded Central Arizona Project is the last chance for these Arizona cities to get their water management under control**. The CAP **provides a massive infusion of Colorado water into these desert communities and irrigated areas**. But this supply too is finite. The average diversion of Colorado River water is to be 1.2 maf/yr, that is, it will not even match the present-day ground-water overdraft. **It is the first major Federal project designed to salvage existing but doomed irrigation projects, rather than bringing new areas under irrigation: no new ground is to be irrigated, and every acre-foot of Colorado water must be balanced by discontinuing one acre-foot of groundwater pumping**. Furthermore, **CAP water is costly**, and has salinity problems. It is pumped uphill from the Colorado at Lake Havasu to the Phoenix and Tucson areas. In the last resort, the regional water managers will buy up water rights in order to supply the cities, sharing the cost among the users. It seems increasingly likely that this will happen. The result will be that **agricultural irrigation will be diminished,** and that **farmlands will revert to desert. (The transition back to desert vegetation will be slow, because the ecosystem has been disturbed so much.)** **The Arizona cities will then become, even more than they are now, oases, dependent on import of massive quantities of food, water, fuel, and all other economic supplies for their existence and that of the millions of their inhabitants**. Tucson.‹**Tucson receives only 11 inches of rain, but has long been able to rely on ground water, supplied from aquifers** in the sand and gravel of the desert lowland valleys. **By 1940 Tucson was large enough to begin to deplete these underground sources faster than they recharged**, and the Santa Cruz River has not flowed as far as Tucson since the mid-1940s. The city was allowed to grow at a phenomenal rate, with nearly 7 square miles a year being converted to "high-intensity use," that is, urban residential areas.

### Overpumping Bad – Sustainable Ag (Tessa’s Dad)

#### Trends of overpumping put small commercial farmers out of production – guts sustainable agriculture

**Finley ’12** (Bruce, J.D + water rights journalist for the Denver post, “Water worries in Colorado’s san luis valley come to surface,” http://www.denverpost.com/news/ci\_19756115)

SAN PABLO **— Water here is so scarce that farmers habitually gaze up at the mountains surrounding their valley — where overpumping from aquifers may force 80,000 irrigated acres out of production**. As Rose Medina traversed her ancestral lands last week, scanning the Sangre de Cristos for the promise of a strong spring runoff, she saw barely a dusting of snow. "Looks like **we'll need more,"** Medina said. Big spring snow could send water coursing down Culebra Creek and into her "lindero" boundaries — headgates controlled by an elected "mayordomo" steward — allowing growth of hay for her 16 cows and quenching her apple, plum and cherry trees. **The ancient Moorish water-sharing methods adapted 400 years ago in southern Colorado ensure that, even in dry years, small family farmers survive. But survival is far from ensured across the broader San Luis Valley, where leaders in an area that's already among the poorest in the state are bracing for a major economic hit.** "Agriculture alone cannot sustain the economy of the San Luis Valley," Colorado agriculture commissioner John Salazar recently told residents. **Unlike** Medina's 40-acre farm and **others that rely on only surface water, the commercial agriculture** that built up the valley **is large-scale and competitive, and relies on center-pivot irrigation devices that pump heavily from underground aquifers. Commercial production of potatoes and hay** — using 6,000 wells and 2,700 center-pivots to irrigate 120-acre crop circles — **exploded after the 1950s. The pumping has depleted aquifers by more than 1 million acre-feet since 1976 and now is affecting surface streams. One acre-foot approximately serves the needs of two families of four for a year**. By May, center-pivot farmers must activate a plan to reduce the water pulled from the aquifer by about 30,000 acre-feet a year. **"They've got to start to restore it**," state engineer Dick Wolfe said**. To avoid state shutdowns of wells — as happened in 2009 in northeastern Colorado** **— commercial farmers propose to pay to pump or purchase new surface-water rights and use these to offset pumping from aquifers.** **While water may be conserved, the increased cost may cause 80,000 irrigated acres to come out of production. That represents a substantial chunk of the agricultural base in a valley where 38 percent of children live in poverty. In one crucial subdistrict, the expected loss of 40,000 acres over the next five years represents nearly 25 percent of total farmland. "These communities, and no doubt other communities around the world, are coming to the realization that business as usual has to change,**" said Mike Gibson, manager of the San Luis Valley Water Conservancy District and chairman of the Rio Grande roundtable that participates in statewide planning. "**We're looking at quite a lot of pain**," Gibson said. "We don't know how much. The numbers of jobs we see at these solar energy facilities are relatively small." **The tightening water regime is forcing agricultural leaders to align production with natural limits in a semi-arid environment**. Colorado's obligations under an interstate compact governing the Rio Grande **constrain what farmers can draw from surface streams and the hydrologically connected aquifers. In the past, Texas and New Mexico have sued Colorado for drawing too much water from the Rio Grande. Legal enforcers are especially vigilant today — with drought ravaging Texas and cities such as Albuquerque, where municipal water wells are depleted**. For many San Luis Valley farmers, **the prospect of rising costs and cutting their acreage appears overwhelming. "We're going to farm less ground,**" potato producer Brian Neufeld, 34, said. He grew up in the valley and, six years ago, began growing potatoes on two irrigated circles of his own. The fees he and others in **his subdistrict pay probably will increase to $75 per acre-foot, from $45. That raises costs by as much as $20,000 for an irrigated crop circle. "It might mean less employees,**" Neufeld said. "It might mean layoffs in the area, less crops around the valley. **That's going to affect towns. Some guys think this is the start of a downward decline for their farms." But the time has come for commercial farms "to pay for the impacts they are causing to the river**," said Steve Vandiver, manager of the Rio Grande Water Conservation District and the leader of efforts to find water to replace water pumped from wells. Rio Grande County Commissioner Karla Shriver, who in the 1990s led opposition to a Canadian developer's push to plumb the valley's deep aquifers and export water to booming Front Range suburbs, said mining jobs must make a comeback to help cushion the loss of irrigated acres. Meanwhile, small-scale farmers like Medina, who hold long-established rights to surface water, are relatively unaffected and already have other sources of income. She works as a teaching assistant. She counts only on snowpack to keep creek water flowing into gravity-based "acequia" ditches. The communal People's Ditch system in San Pablo, San Luis and neighboring Spanish land-grant communities, which dates to 1852, increasingly serves as a model of prudent agriculture. Interior Secretary Ken Salazar calls it "a perfect example of an important part of history that needs to be preserved." U.S. Department of Agriculture soil-conservation officials contribute about $300,000 a year to support its operation. "It's all about efficiency, giving your crops just what they need and then sharing the water with everybody else," said Cerro Ditch Co. president Joseph Lobato. Coloradans "ought to treat every drop of water as if it's our last" and study efficiencies of systems like this, Gov. John Hickenlooper said. However, **it may make sense to line the ditches to improve flows for the future,** he said. "**Once you've done that**," he said, "**you maintain a landscape** you can talk about." Medina is weighing how much hay she should plant. **New steel headgates reduce the water wasted** when she diverts her allotments to crops. She refers to her forefathers who settled the land — and looks down from the mountains at fat cows grazing beyond her trees. **"There is no survival without agriculture."**

### Overpumping: Spills Over

#### Overpumping aquifers leads to groundwater depletion throughout the country, not just arid states

**USGS 12** (US geological survey, “Groundwater depletion,” Mar 9 2012, <http://ga.water.usgs.gov/edu/gwdepletion.html>**)**

**Groundwater depletion has been a concern in the Southwest and High Plains for many years, but increased demands on our groundwater resources have overstressed aquifers in many areas of the Nation, not just in arid regions**. In addition, **groundwater depletion occurs at scales ranging from a single well to aquifer systems underlying several states. The extents of the resulting effects depend on several factors including pumpage and natural discharge rates, physical properties of the aquifer, and natural and human-induced recharge rates.** Some examples are given below. Atlantic Coastal Plain - In Nassau and Suffolk Counties, Long Island, New York**, pumping water for domestic supply has lowered the water table, reduced or eliminated the base flow of streams, and has caused saline groundwater to move inland.** Many other locations **on the Atlantic coast are experiencing similar effects related to groundwater depletion. Surface-water flows have been reduced** due to groundwater development in the Ipswich River basin, Massachusetts. Saltwater intrusion is occurring in coastal counties in New Jersey; Hilton Head Island, South Carolina; [Brunswick and Savannah, Georgia](http://ga2.er.usgs.gov/coastal/); and Jacksonville and Miami, Florida (Barlow). The chart below shows **monthly-mean water levels from 1964 to 2003** for a well in Cook County, sourthwest Georgia. The well is used for irrigation and public-supply purposes and **offers a good visual representation of long-term groundwater declines due to excessive pumping**. [[d]](http://ga.water.usgs.gov/edu/gwdepletionchart.html) - data for the chart is available. West-central Florida - **Groundwater development in the Tampa-St. Petersburg area has led to saltwater intrusion and subsidence in the form of**[**sinkhole**](http://ga.water.usgs.gov/edu/sinkholes.html)**development and concern about surface-water depletion from lakes in the area**. In order to reduce its dependence on groundwater, Tampa has constructed a desalination plant to treat seawater for municipal supply. Gulf Coastal Plain - **Several areas in the Gulf Coastal Plain are experiencing effects related to groundwater depletion: Groundwater pumping by Baton Rouge**, Louisiana, **increased more than tenfold between the 1930s and 1970, resulting in groundwater-level declines of approximately 200 feet. In** the **Houston**, Texas, area, **extensive groundwater pumping to support economic and population growth has caused water-level declines of approximately 400 feet**, resulting in extensive land-surface subsidence of up to 10 feet. Continued **pumping since the 1920s by many industrial and municipal users from the underlying Sparta aquifer have caused significant water-level declines in Arkansas, Louisiana, Mississippi, and Tennessee**. The **Memphis**, Tennessee area **is one of the largest metropolitan areas in the world that relies exclusively on groundwater for municipal supply**. Large withdrawals have caused regional water-level declines of up to 70 feet. High Plains - **The High Plains aquifer** (which includes the Ogallala aquifer) **underlies parts of eight States and has been intensively developed for irrigation. Since predevelopment, water levels have declined** more than 100 feet in some areas and the saturated thickness has been reduced by more than half in others. Pacific Northwest - Groundwater **development of the Columbia River Basalt aquifer of Washington and Oregon for irrigation, public-supply, and industrial uses has caused water-level declines** of more than 100 feet in several areas. Desert Southwest - **Increased groundwater pumping to support population growth in south-central Arizona** (including the Tucson and Phoenix areas) **has resulted in water-level declines** of between 300 and 500 feet in much of the area. Land subsidence was first noticed in the 1940s and subsequently as much as 12.5 feet of subsidence has been measured. Additionally, **lowering of the water table has resulted in the loss of streamside vegetation.** These pictures show a reach of the Santa Cruz River south of Tucson, Arizona. **In** the **1942** picture **vegetation is growing** in the riparian (river bank) area the river**, indicating that sufficient water in the soil existsed at a level that plant roots could access it. The same site in 1989 shows that the** riparian **trees have largely disappeared as a result of lowered groundwater levels.**

### Food Security Impact

**Groundwater depletion threatens food security in major production areas within decades**

**Airhart 6/5** (Marc, geology foundation @ Jackson school of geosciences, “Water crisis in california, texas threatens US food security,” 6/5/12, http://westernfarmpress.com/irrigation/water-crisis-california-texas-threatens-us-food-security?page=2)

**The nation's food supply may be vulnerable to rapid groundwater depletion from irrigated agriculture**, according to a new study by researchers at The University of Texas at Austin and elsewhere. The study, which appears in the journal *Proceedings of the National Academy of Sciences*, paints the highest resolution picture yet of how groundwater depletion varies across space and time in California's Central Valley and the High Plains of the central U.S. Researchers hope this information will enable more sustainable use of water in these areas, although they think irrigated agriculture may be unsustainable in some parts. "**We're already seeing changes** in both areas," said Bridget Scanlon, senior research scientist at The University of Texas at Austin's Bureau of Economic Geology and lead author of the study. **"We're seeing decreases in rural populations in the High Plains. Increasing urbanization is replacing farms in the Central Valley. And during droughts some farmers are forced to fallow their land. These trends will only accelerate as water scarcity issues become more severe."** Three results of the new study are particularly striking: First, during the most recent drought **in California's Central Valley, from 2006 to 2009, farmers in the south depleted enough groundwater to fill the nation's largest man-made reservoir**, Lake Mead near Las Vegas—**a level of groundwater depletion that is unsustainable at current recharge rates.** Second, a third of the groundwater depletion in the High Plains occurs in just 4% of the land area. And third, the researchers project that if **current trends continue some parts of the southern High Plains that currently support irrigated agriculture, mostly in the Texas Panhandle and western Kansas, will be unable to do so within a few decades. California's Central Valley is sometimes called the nation's "fruit and vegetable basket." The High Plains, which run from northwest Texas to southern Wyoming and South Dakota, are sometimes called the country's "grain basket." Combined, these two regions produced agricultural products worth $56 billion in 2007, accounting for much of the nation's food production. They also account for half of all groundwater depletion in the U.S., mainly as a result of irrigating crops.**

## Water Toxicity

### Investment K2 Clean Water

#### Damaging cuts to Clean Water Act – must restore funding

**Dziedzina 6/28** (Don, Chicago tribune journalist, “House interior appropriations bill slashes conservation funding,” June 28 2012, http://www.chicagonow.com/illinois-outdoors/2012/06/house-interior-appropriations-bill-slashes-conservation-funding/)

**The House** Appropriations Committee today **voted for an Interior Appropriations bill that slashes funding for conservation and continues a month-long assault on Clean Water Act protections for healthy wetlands, clean streams, and drinking water for 117 million Americans. The deep funding cuts approved in the bill will undermine conservation**, public land management, and the outdoor recreation economy. The Land and Water Conservation Fund (LWCF), which conserves public land essential for fish and wildlife as well as hunting, angling, and outdoor recreation, will be cut from $345 million in the current fiscal year to approximately $66 million in FY 2013. Funding to operate and maintain National Wildlife Refuges, which not only conserve wildlife but generate $1.7 billion in economic activity and support 27,000 private sector jobs, is cut from $486 million to $437 million. “This bill has made funding decisions that do not reflect the needs of American sportsmen, who comprise a critical component of the national economy,” says Steve Kline, Director of the Center for Agriculture and Private Lands at the Theodore Roosevelt Conservation partnership. “Hunters and anglers are willing to do our part in these lean budget times, but the cuts contained in the House Interior Appropriations bill will accelerate the loss of fish and wildlife habitat and may mean fewer days afield for outdoor enthusiasts. Combined with counterproductive policy riders, this bill is a losing proposition for the nation’s sportsmen.” The Interior Appropriations bill is the latest in a series of bills and amendments in the House and Senate that undermine hunting, angling, and outdoor recreation traditions along with the economic activity driven by these sports. **This bill includes a rider** (Section 434) **barring the** Environmental Protection Agency **(EPA) from finalizing and implementing science-based Clean Water Act guidance or initiating future rulemaking. Earlier this month, the House passed an Energy and Water bill with similar restrictions** placed on the Army Corps of Engineers. **Representative** Jim **Moran** (D-VA**) continued to lead the fight to restore clean water protections by offering an amendment on Wednesday to strip this and other damaging riders from the bill**. Unfortunately, this amendment was defeated on a vote of 19 in favor and 28 against. “From appropriations bills in the House to amendments proposed to the Senate Farm Bill, protections for streams, wetland habitat, and drinking water for 117 million Americans are under attack,” says Scott Kovarovics, Conservation Director for the Izaak Walton League of America. “In the past month, **Congress has taken aim at the Clean Water Act and, inexplicably, pulled both barrels.” “These riders would leave us with an intolerable status quo that threatens wetlands and tributaries that provide clean water for iconic systems like the Chesapeake Bay and Great Lakes, recharge aquifers**, help retain floodwaters, and provide important fish and wildlife habitat,” says Jan Goldman-Carter, Senior Manager, Wetlands and Water Resources, for the National Wildlife Federation**. “They are also out of step with public opinion that consistently supports strong and broad Clean Water Act protections.” “The attacks on the Clean Water Act are unprecedented** in recent memory,” says Steve Moyer, Vice President for Government Affairs at Trout Unlimited. “Not one but a growing number of threats are converging on the water resources and fish and wildlife that matter most to sportsmen. **Members of Congress should focus more on restoring protections for our waters than racing each other to tear them down and should work with EPA and the Corps to enable those agencies to effectively implement the Clean Water Act.”**

### Clean Water Act Key

#### Clean Water Act key to prevent toxic industrial waste in drinking water – causes cancer, developmental and reproductive disorders

**EARPC 12** (Environment America Research and Policy Center, 3/22/12, “wasting our waterways: toxic industrial pollution and the unfulfilled promise of the clean water act,” <http://www.environmentamerica.org/reports/ame/wasting-our-waterways-2012>**)**

**Industrial facilities discharged** approximately **1.5 million pounds of chemicals linked to cancer to more than 1,000 waterways during 2010. Nevada’s Burns Creek received the largest volume of carcinogenic releases, with a small neighboring creek placing third. The Mississippi River, Ohio River, and Tennessee River also suffered large releases of carcinogens**. Pulp and paper mills, gold mines and chemical manufacturers were the industries that released the greatest volume of carcinogenic chemicals in 2010. About **626,000 pounds of chemicals linked to developmental disorders were discharged into more than 900 waterways. Burns Creek in Nevada, a small waterway near a gold mine, suffered the greatest amount of developmental toxicant discharges, followed by the Kanawha River in West Virginia and the Mississippi River.** Gold mining was the largest source of developmental toxicants, followed by pesticide manufacturing and fossil fueled power generation. Approximately **354,000 pounds of chemicals linked to reproductive disorders were released to more than 900 waterways. West Virginia’s Kanawha River received the heaviest dose of reproductive toxicants, followed by the Mississippi, Ohio, and Brazos rivers. Discharges of persistent bioaccumulative toxics (including dioxin and mercury)**, organochlorines, and phthalates **are also widespread. Safer industrial practices can reduce or eliminate discharges of these and other dangerous substances to America’s waterways. To protect the public and the environment from toxic releases, the U**nited **S**tates should prevent pollution by requiring industries to reduce their use of toxic chemicals and **restore and strengthen Clean Water Act protections** for all of America’s waterways. *The United States should restore Clean Water Act protections to all of America’s waterways and improve enforcement of the Clean Water Act.* The Obama Administration should **clarify that the Clean Water Act applies to headwater streams, intermittent waterways, isolated wetlands and other waterways for which Clean Water Act protection has been called into question** as a result of recent Supreme Court decisions.  EPA and the states **should strengthen enforcement of the Clean Water Act** by, among other things, ratcheting down permitted pollution levels from industrial facilities, ensuring that permits are renewed on time, and requiring mandatory minimum penalties for polluters in violation of the law. EPA should eliminate loopholes – such as the allowance of “mixing zones” for persistent bioaccumulative toxic chemicals – that allow greater discharge of toxic chemicals into waterways.

### Water Toxicity Bad: Environment

#### Industrial toxins pollute municipal drinking supply

**EARPC 12** (Environment America Research and Policy Center, 3/22/12, “wasting our waterways: toxic industrial pollution and the unfulfilled promise of the clean water act,” <http://www.environmentamerica.org/reports/ame/wasting-our-waterways-2012>**)**

**Industrial facilities continue to dump millions of pounds of toxic chemicals into America’s rivers, streams, lakes and ocean waters each year – threatening both the environment and human health.** According to the U.S. Environmental Protection Agency (EPA**), pollution from industrial facilities is responsible for threatening or fouling water quality in more than 14,000 miles of rivers and more than 220,000 acres of lakes, ponds and estuaries nationwide. The continued release of large volumes of toxic chemicals into the nation’s waterways shows that the nation needs to do more to reduce the threat posed by toxic chemicals to our environment and our health** and to ensure that our waterways are fully protected against harmful pollution. Industrial facilities dumped 226 million pounds of toxic chemicals into American waterways in 2010, according to the federal government’s Toxic Release Inventory. **Toxic chemicals were discharged to more than 1,400 waterways in all 50 states. The Ohio River ranked first for toxic discharges in 2010, followed by the Mississippi River and the New River in Virginia and North Carolina.**

#### Industrial pollutants threaten human health and environment – increasingly more chemical waste in rivers

**SDWF 3** (Safe Drinking Water Foundation, “Industrial waste,” updated 2003, www.safe**water**.org/PDFS/knowthefacts/**Industrial**Waste.pdf)

The types of industrial waste generated include cafeteria garbage, dirt and gravel, masonry and concrete, scrap metals, trash, oil, solvents, chemicals, weed grass and trees, wood and scrap lumber, and similar wastes. Industrial solid waste - which may be solid, liquid or gases held in containers - is divided into hazardous and non-hazardous waste. Hazardous waste may result from manufacturing or other industrial processes. Certain commercial products such as cleaning fluids, paints or pesticides discarded by commercial establishments or individuals can also be defined as hazardous waste. Non-hazardous industrial wastes are those that do not meet the EPA's definition of hazardous waste - and are not municipal waste. **Industrial waste has been a problem since the industrial revolution. Industrial waste may be toxic, ignitable, corrosive or reactive. If improperly managed, this waste can pose dangerous health and environmental consequences. In the United States, the amount of hazardous waste generated by manufacturing industries in the country has increased from an estimated 4.5 million tons annually after World War II to some 57 million tons by 1975. By 1990, this total had shot up to approximately 265 million tons. This waste is generated at every stage in the production process, use and disposal of manufactured products**. Thus, the introduction of many new products for the home and office - computers, drugs, textiles, paints and dyes, plastics - also introduced hazardous waste, including toxic chemicals, into the environment. These, too, must be managed **with extreme care to avoid adverse environmental or human health impacts**. The EPA estimated in 1980 that more than 70,000 different chemicals were being manufactured in the U.S., with some 1,000 new chemicals being added each year. **The human health and environmental impacts of many of these chemicals are largely unknown. High levels of toxic contaminants have been found in animals and humans, particularly those, like farm workers and oil and gas workers, who are continually exposed to such waste streams. Waste water from manufacturing or chemical processes in industries contributes to water pollution**. Industrial waste water usually contains specific and readily identifiable chemical compounds. Water pollution is concentrated within a few subsectors, mainly in the form of toxic wastes and organic pollutants. Out of this a large portion can be traced to the processing of industrial chemicals and to the food products industry. Most major industries have treatment facilities for industrial effluents but this is not the case with small-scale industries, which cannot afford enormous investments in pollution control equipment as their profit margin is very slender. **The effects of water pollution are not only devastating to people but also to animals, fish, and birds. Polluted water is unsuitable for drinking, recreation, agriculture, and industry.** It diminishes the aesthetic quality of lakes and rivers. More seriously, **contaminated water destroys aquatic life and reduces its reproductive ability. Eventually, it is a hazard to human health. Nobody can escape the effects of water pollution.**

## Economy

### Water K2 Econ

#### Spurs economic growth – jobs, national output, industrial spillover

Wymen 12 (Eben, Journal: Alternative financing tools to water infrastructure, “public benefit through the private sector,” 2012, www.uimonline.com/downloads/uim-financing-tools.pdf)

Sudden Impact: An Assessment of **Short-Term Economic Impacts of Water** Wastewater Construction **Projects** in the United States, which **demonstrated the economic benefits that come with these investments**. The study found that **every $1 billion invested in water** and waste- water infrastructure c**reates up to 27,000 new jobs with aver- age annual earnings of more than $50,000, increases national output** (i.e., demand for products and services in other industries) **by up to $3.46 billion, and produces more that $1 billion in personal** (spending) **income**. Importantly, a $1 billion invest- ment also **generates approxi- mately $82.4 million in state and local tax revenue** at a time when states and local commu- nities need it most. It’s also important to note **the broad range of jobs that are created** when underground environmental infrastructure projects get off the ground. The Sudden Impact study underscored **the ripple effect that construction employment offers. In addition to construction jobs, investment in water infrastructure generates measureable employment in 325 standard industry classifications** recognized by the US Census Bureau. Scores of jobs are created in **industries such as architecture, health care, retail, automotive, restaurant, entertainment and accounting, just to name a few.**

## Turns case

### Water K2 Development

#### Water scarcity kills development projects – political resistance

**Phillips 3/20** (Patrick, Urban land institute, “ULI infrastructure updates,” 3/20/12, http://www.uli.org/sitecore/content/ULI2Home/ResearchAndPublications/PolicyPracticePriorityAreas/Infrastructure/Infrastructure%20Update.aspx)

TIGER Grants In late February**, USDOT** [announced awards](http://www.uliemail.org/ls.cfm?r=178889968&sid=8890278&m=952378&u=UrbanLand&s=http://www.dot.gov/affairs/2010/dot3010.htm) under the $1.5 billion Transportation Investment Generating Economic Recovery (TIGER) program. The agency **selected 51 innovative transportation projects** from among the 1,400 applications received, choosing projects based on their ability to create jobs, enhance community livability, improve environmental outcomes, and leverage public and private partnerships and resources. Awardees include $83 million for Moynihan Station in New York City; $100 million to address freight congestion in Chicago; streetcars in Dallas, Tucson, and New Orleans; and [more](http://www.uliemail.org/ls.cfm?r=178889968&sid=8890279&m=952378&u=UrbanLand&s=http://www.dot.gov/documents/finaltigergrantinfo.pdf). $600 million is available in FY 2010 for the TIGER program. High-Speed Rail $8 billion in high-speed rail grants were [announced](http://www.uliemail.org/ls.cfm?r=178889968&sid=8890280&m=952378&u=UrbanLand&s=http://www.dot.gov/affairs/2010/dot1810a.htm) in late January, with large chunks of the funding going for the development of new high-speed rail corridors in Florida (which received $1.25 billion) and California (which received $2.25 billion). Applicants submitted $55 billion in proposals. The FY 2010 budget includes an additional $2.5 billion for high-speed rail, with $1 billion requested in FY 2011. ULI CEO Patrick Phillips [praised the awards](http://www.uliemail.org/ls.cfm?r=178889968&sid=8890281&m=952378&u=UrbanLand&s=http://www.uli.org/sitecore/content/ULI2Home/News/MediaCenter/PressReleases/2010%20archives/Content/ObamaHighSpeedRailGrants.aspx), noting that the Institute has long called for increased investment in high-speed and passenger rail systems.Land Use and Water Symposium and Federal Update January 8, 2010**Adapting to a Drier West: Symposium Looks at Links between Land Use and Water During the last upswing in the market cycle, water proved to be a deal-killer for development projects in some western communities. Water scarcity—real or imagined—was the basis for political resistance against some projects, while others could not acquire water rights at prices that made sense for the bottom line.**

# \*\*\* General Tools \*\*\*

## Uniqueness

### A2 “Obama spent money”

#### The spending is only 50 billion

Ryan ’12 (Rep. Paul Ryan, chairman of the budget committee, 2/15/12, “REP. PAUL D. RYAN HOLDS A HEARING ON THE PRESIDENT'S FY2013 BUDGET”, Budget hearing transcript)

His plan includes $50 billion for immediate infrastructure investment to help put people back to work rebuilding our roads, our bridges, helping expand broadband, and it also contains a long-term plan for infrastructure development. It stands in great contrast, I will say, to the infrastructure bill that we're taking up on the floor of the House this week, which doesn't begin to do the job in which former Republican congressman, Ray LaHood, now secretary of Transportation, called the worst transportation bill he has seen in 35 years of public service. That just doesn't get the job done.

## Link

### Link: Tradeoffs Occur

#### Tradeoffs will happen within infrastructure

Trimbath ’11 (Susanne, Dr. Trimbath is former Senior Research Economist in Capital Market Studies at Milken Institute, “Economic Infrastructure: building for prosperity”, Chamber of commerce, https://www.uschamber.com/sites/default/files/issues/infrastructure/files/LRA\_Index\_Economic\_Analysis\_2011\_10\_17.pdf)

There are two primary obstacles to breaking out the relationship of the economy to the individual components of infrastructure. The first is that businesses make tradeoffs and substitutions among certain elements of infrastructure. A simple example is when businesses use video conferencing instead of face-to-face meetings – substituting broadband infrastructure for transportation (U.S. Chamber 2010a). 4 It was not possible within the scope of this project to sort out all the potential tradeoffs, although we attempt to control for separate impacts through the use of proxy measures (i.e., controlling for differing regulatory regimes).

Balanced approach key, $2.5 needs to be cut for every $1 of revenue

Ryan ’12 (Rep. Paul Ryan, chairman of the budget committee, 2/15/12, “REP. PAUL D. RYAN HOLDS A HEARING ON THE PRESIDENT'S FY2013 BUDGET”, Budget hearing transcript)

I think that's right. So it's a two-step process. It's a focus on job creation, making sure that we continue to have the economic recovery starting with the payroll tax, unemployment, extending that, the $50 billion of infrastruc-ture, modernizing our schools just to hit a few of the highlights. At the same time, we move to deficit reduction across the medium term. The key is that it's a balanced approach. And this is at the core of everybody's approach outside of -- or most approaches outside of this chamber in terms of looking to Bowles-Simpson as an example. But it's a balanced approach. Our approach has $2.50 of spending cuts for every $1 of revenue.

#### The problem is explicitly financial – not enough federal infrastructure dollars

Keppen 8 (Dan, exec director of family farm alliance, “Innovative approach to help irrigators fix aging infrastructure stymied by Washington bureaucrats,” May 08**,** familyfarmalliance.clubwizard.com/.../Microsoft%20Word%20-)

**There is a growing recognition of the problem of aging public infrastructure across the Nation. Federal water supply systems are critically important to Western communities, farms, and the environment. These facilities are an essential component of the nation’s food-production system and their operation helps ensure our ability to provide reliable and secure food for our own citizens and the rest of the world.The problem with fixing aging public infrastructure is financial. There are not enough federal dollars to go around for burgeoning repair needs.**

#### It would trade off – all infrastructure funds come from the same place

Congressional Budget Office 08(“Issues and options in infrastructure investment,” May 2008, www.cbo.gov/sites/default/files/cbofiles/.../05-16-infrastructure.pdf)

Different observers have different definitions of “infrastructure,” but as discussed in this paper**, infrastructure consists of transportation systems** (highways, roads, air, water, and rail), utilities (**water**, gas, **electricity**, and telecommunications), **and some other kinds of public facilities** (schools, postal facilities, and prisons). **The national investment in infrastructure defined this way is more than $400 billion per year**, of which about $60 billion is funded by the federal government, **primarily for** highways and other **transportation networks. Policymakers would face several challenges if they sought to enhance the quality of the nation’s infrastructure—among them determining the kinds of projects the nation requires**; how those projects should be funded and by whom; and how private development should be fostered, where that is an appropriate approach. Although more detailed analyses are needed to identify economically justifiable spending on infrastructure and to find appropriate mechanisms to fund those investments, work done to date by the Congressional Budget Office (CBO) and others yields several important conclusions: Estimates from the Federal Highway Administration (FHWA) and other sources indicate that additional spending of up to tens of billions of dollars each year on transportation infrastructure projects could be justified. Some of that spend- ing would simply maintain the current performance of existing infrastructure; other projects would improve performance to the extent that the economic benefits exceeded the costs (although some projects would have net benefits that were smaller than those that could be obtained from spending on items besides infrastructure). In general, additional government spending for nontransportation infrastructure appears more difficult to justify. In some instances, the interaction of private producers and consumers in the marketplace determines an appropriate level of spending on infrastructure. In other instances, the case for a government role might be strong, but the case for specific additional spending either is not well documented or is difficult to justify from an economic perspective. Although the rationale for some additional spending is probably strong, the eco- nomic returns on specific projects vary widely. The evidence suggests that a rel- atively large share of net benefits would come from a relatively small share of projects. Accordingly**, even if the Congress were to increase spending, it would be important to identify which projects provided the largest potential benefit from limited budgetary resources.** Some of the demand for additional spending on infrastructure could be met by providing incentives to use existing infrastructure more efficiently and **by devoting current budgetary resources to their highest valued uses.**

#### Republicans will want cuts

Ryan ’12 (Rep. Paul Ryan, chairman of the budget committee, 2/15/12, “REP. PAUL D. RYAN HOLDS A HEARING ON THE PRESIDENT'S FY2013 BUDGET”, Budget hearing transcript)

This is a question of choices. If last year's Republican budget is any sign of where we'll head this year, if they take a lopsided approach, further slashing investments in education, in science and research and infrastructure, which are critical drivers of the economy, and they do slash the social safety net in that they cut $700 billion from Medicaid that goes to help people like the vulnerable seniors in nursing homes, and they do ask seniors on Medicare to carry the entire risk of rising health care costs -- and that's their choice, but that's not a balanced approach. And I think what we see here in the president's budget is a responsible approach that takes that balanced approach to dealing with a very serious problem.

#### Trades off - funding comes from the same place

Congressional Budget Office 08(“Issues and options in infrastructure investment,” May 2008, www.cbo.gov/sites/default/files/cbofiles/.../05-16-infrastructure.pdf)

Under any definition, “**infrastructure investment” encompasses spending on a variety of projects**. For present purposes, it is useful to distinguish **transportation**, which receives **the bulk of federal support, from other types of infrastructure, such as utilities.** Both types of assets promote other economic activities: An adequate road, for example, facilitates the transport of goods from one place to another and thereby promotes economic activity; utilities that provide such services as electric- ity, telecommunications, and waste disposal are also essential to modern econo- mies. (Appendix A describes spending on research and development and on education. Those categories form the basis for supporting intellectual and human capital, respectively, and can provide benefits that are similar to those generated by infrastructure spending.)

#### The plan trades off with other programs

Amekudzi 1 (Adjo, PH.D. Transportation Systems (Infrastructure) School of Civil & Envir. Engineering Georgia Institute of Technology “Application of Shortfall Analysis and Markowitzí Theory in Investment Tradeoff Analysis for Competing Infrastructure: Using HERS and NBIAS for Integrated Asset Management”, 5th International Conference on Managing Pavements, [http://www.pavementmanagement.org/ICMPfiles/2001087.pdf)](http://www.pavementmanagement.org/ICMPfiles/2001087.pdf)/RK)

In asset management, we are concerned with at least four different levels of tradeoff analysis. Three of these are used when we independently manage different types of infrastructure, for which we are concerned with analyzing tradeoffs to answer the following questions (2): 1) In what facilities must we invest? 2) When must we invest in these facilities? 3) In what types of improvement actions must we invest? When we attempt to provide integrated management for non-homogeneous facilities, we are concerned with another important question: What relative levels of investment should we make in each of the competing facilities (point and network)? For integrated asset management, this additional information is necessary to increase (or attempt to maximize) the overall value of our collective assets, in the context of constrained budgets. To be more effective therefore, an integrated asset management system must provide guidance on appropriate levels of investments for competing infrastructure facilities, for the purpose of maintaining, increasing or maximizing the collective value of these assets over time.

### A2 P3’s Solve Link

#### The government still spends money on P3’s to guarantee a secure partnership

Garvin ‘8 (Michael J., Ph.D., P.E. is an Associate Professor of construction at Virginia Tech, November, 20, 2008, “Assessing the Effectiveness of Infrastructure Public–Private Partnership Programs and Projects”, http://pwm.sagepub.com/content/13/2/162.abstract)

The P3 arrangements are often viewed by governments as a solution to infrastructure-funding shortfalls (Orr, 2006). This claim, however, is somewhat contentious as a government certainly has the capacity to utilize user fees, which are often an integral part of a P3 project, as the principal security for a project’s financial package while also offering its general creditworthiness as secondary security. One would expect that the cost of capital for such an arrangement would be lower than the cost that a private sponsor could obtain, even if taxexempt status is granted.

#### P3’s grant too much control for the private industry

Garvin ‘8 (Michael J., Ph.D., P.E. is an Associate Professor of construction at Virginia Tech, November, 20, 2008, “Assessing the Effectiveness of Infrastructure Public–Private Partnership Programs and Projects”, http://pwm.sagepub.com/content/13/2/162.abstract)

Nonetheless, the state and society should demand more than an economic premium for granting the private sector the right to develop and/or operate facilities that are generally public goods. Indeed, the private players in this arena have the expertise, the agility, and the incentive to provide more—higher quality of service, reasonable price for the service, faster availability of the service, and net contributions to the environment. If not, their expertise is for all intents and purposes wasted. Moreover, the risks of transferring these responsibilities to the private sector could be too great.

# \*\*\* Aff Answers \*\*\*

## Uniqueness

### Non-Unique: Investment

#### Ryan’s budget would destroy investment anyway

Hersh ’12 (Adam, an economist at American Progress, March 20, 2012, “New Ryan Budget Disinvests in America”, http://www.americanprogress.org/issues/2012/03/budget\_disinvestment.html/)

The House Republican budget proposal released today would be a disaster for the American economy, cutting out the heart of investments that are critical to growth and competitiveness. Investment—both public and private—is the most fundamental determinant of economic growth. Investment creates jobs and boosts the economy today while raising productivity growth and living standards in the long run. Public investment in particular plays a vital role in providing investments that offer large returns for all but little immediate return for private individuals or businesses—such as schools and roads and scientific research from which we all benefit. That’s why the conservative budget proposed today by Rep. Paul Ryan (R-WI), chairman of the House Budget Committee, is bad news for our economy. If enacted, the House budget could undermine the momentum of two straight years of creating a total of nearly 4 million new private-sector jobs. Worse, the Ryan budget will rob Americans of future economic opportunities by slashing more than $871 billion of investment in education and skills training, science and technology research and development, and transportation infrastructure in the decade between 2013 and 2022. This year’s proposed House budget walks back from the $1.4 trillion investment cuts Rep. Ryan proposed in 2011 but still cuts deep enough to damage our economy now and in the long run. Economists assess prospects for economic growth by looking at how investment per capita grows over time—the more capital goods, skills, and knowledge people have to work with, the more productive and creative they can be. At a minimum, investment should keep pace with population growth and inflation, and replace depreciated past investments as they get worn out and used up through normal use.

### Non-Unique: Water

#### Federal funds insignificant – dramatic increases needed for maintenance alone

**Nuzzo 6** (Jennifer, Center for biosecurity of UPMC, “The biological threat to US water supplies: toward a national water security policy,” June 2006, http://www.upmc-biosecurity.org/website/resources/publications/2006/2006-06-15-watersecuritypolicy.html)

**To secure the nation’s water supply, the federal government must create a grant program specific to water sector security improvements. The financial state of the water sector is such that utilities will be unable to maintain comprehensive security programs for the long term.**  As reported in a 2004 GAO report, drinking water and wastewater **utilities will need to invest hundreds of billions over the next 20 years just to maintain their infrastructure** for routine operations. The projected needs range from $485 billion to nearly $1.2 trillion.48 EPA estimates 20-year needs for drinking water transmission and distribution to be **$83.2 billion, plus an additional $18.4 billion for storage facility infrastructure needs**.39 In 2002, a survey of several thousand water utilities reported that 29% of drinking water and 41% of wastewater utilities were not generating enough revenue from user rates and other local sources to cover their full cost of service. As a result, **roughly one-third of the utilities deferred maintenance because of insufficient funding, had 20% or more of their pipelines nearing the end of their useful life, and lacked basic plans for managing their capital assets.49 Although some federal funds have been made available for security activities at utilities, current funding levels are insignificant with respect to the sector-wide needs.**

#### Water infrastructure already has funding cuts

Gies ’12 (Erica, independent environment reporter for Forbes, 6/28/12 “Spending Cuts Threaten U.S. Water Infrastructure”, http://www.forbes.com/sites/ericagies/2012/06/28/spending-cuts-threaten-u-s-water-infrastructure/)

About the proposed cuts, the Water Environment Federation, a nonprofit association for water quality professionals wrote: On June 20, the House Appropriations Subcommittee on Interior, Environment and Related agencies approved a FY2013 funding measure (PDF) that would [make] … significant reductions in State Clean Water and Drinking Water revolving loan funds for infrastructure. The bill provides $689 million for … CWSRFs, resulting from an approximately … 53 percent cut from the $1.47 billion 2012 enacted level. The DWSRF would be cut 9.7 percent, from … $918 million [in 2012] to $829 million in 2013. The programs received a shot in the arm in 2009 from American Recovery and Reinvestment Act funding, but appropriations have been steadily declining since: 2010: $2.1 billion for Clean Water SRF and $1.387 billion for Drinking Water SRF 2011: $1.522 billion for Clean Water SRF and $963.1 million for Drinking Water SRF 2012: $1.466 billion for Clean Water SRF and $917.9 million for Drinking Water SRF 2013 (proposed): $689 million for Clean Water SRF and $829 million for Drinking Water SRF

#### No water funding now – CBO interpretations

Keppen 8 (Dan, exec director of family farm alliance, “Innovative approach to help irrigators fix aging infrastructure stymied by Washington bureaucrats,” May 08,familyfarmalliance.clubwizard.com/.../Microsoft%20Word%20-)

As a result, **in most of these cases**, the unthinkable happens: **these vital rehabilitation and replacement projects are delayed or dropped, leaving the facility in badly decomposing or unsafe condition** for future generations to deal with, and setting up the perfect storm of facility failure and resulting damages to property and person. In **the past, Reclamation offered its water users direct loans to cover their share of these major expenses, allowing them to finance over many years their contractual share of these costs over time. However, these direct loans have been discontinued, as mounting pressures on the federal budget have redirected funds that were traditionally dedicated to these loan programs.** Currently, Reclamation does not have any active program that provides either loans or a budget line for the water user share of these rapidly increasing costs, even under hardship conditions. **Congress sought to address the situation by creating an innovative loan guarantee program to help local agencies meet their financial obligations for the repair and rehabilitation of Federal water supply facilities. The Rural Water Supply Act of 2006 authorized a loan guarantee program within Reclamation that would leverage a small amount of appropriated dollars into a large amount of private lender financing** available to qualified Reclamation-contractor water districts with good credit. In essence, Congress authorized Reclamation to co-sign a loan to help their water contractors meet their contract-required, mandatory share of rebuilding and replacement costs of federally-owned facilities. **Given this scenario, it is incredible that Reclamation loan guarantees**, a long-awaited critical financing tool for water users across the West, **are now being held up because of incorrect interpretations of clear Congressional direction** by the Office of Management and Budget (OMB). A recent memo prepared by OMB **concluded that Reclamation can carry out the loan program only if it is willing to siphon large amounts of funding away from other programs and needs within its budget. This is not what Congress intended.**

## Link

### No Link: NRG

#### No link- We are connecting Energy and Transportation now

AEIJA ’12 (The American Energy and Infrastructure Jobs Act, 1/31/12, “Summary of Transportation Reauthorization Proposal”, House of Representatives, http://republicans.transportation.house.gov/Media/file/112th/Highways/2012-01-31-Final\_Rollout.pdf)

The American Energy & Infrastructure Jobs Act (H.R. 7) is an initiative to create long-term American jobs by linking improvements to the nation’s transportation infrastructure with increased production of domestic energy. This key component of House Republicans’ efforts to put Americans back to work is a long-term reauthorization of federal highway, transit and highway safety programs that will streamline and consolidate federal transportation programs, cut red tape and government bureaucracy, increase funding flexibility for states and local governments, better leverage existing infrastructure resources, and encourage more private sector participation in building infrastructure.

The American Energy and Infrastructure Jobs act ensures Energy and transportation cooperation

AEIJA ’12 (The American Energy and Infrastructure Jobs Act, 1/31/12, “Summary of Transportation Reauthorization Proposal”, House of Representatives, http://republicans.transportation.house.gov/Media/file/112th/Highways/2012-01-31-Final\_Rollout.pdf)

This legislation will not be another short-term stimulus failure. Instead, this initiative will provide long-term stability, critical to a state’s ability to plan major transportation infrastructure projects and provide lasting employment. And by removing barriers to American energy production, this fiscally responsible legislation will provide a new, sustainable source of revenue for rebuilding our highways and bridges, reduce energy costs, and create jobs across the country. The American Energy & Infrastructure Jobs Act will be the most significant jobs legislation this Congress will consider.

### No Tradeoff

#### No tradeoff – funding comes from old war budget

Hunter ’12 (Kathleen, business week, “Obama budget doubles infrastructure funds while cutting programs,” Feb 16 2012, http://www.businessweek.com/news/2012-02-16/obama-budget-doubles-infrastructure-funds-while-cutting-programs.html)

President Barack **Obama would almost double spending on** the **U.S. infrastructure over the next six years** and would pour $350 billion into a jobs plan while reducing the budgets of most other domestic agencies**. The blueprint for the** fiscal **2013 budget** released today would spend $476 billion through 2018 on highway, bridge and mass transit projects, **funded in part by** winding down the wars **in Iraq and Afghanistan. It would cut some energy programs, farm subsidies and federal workers’ retirement plans**, while bulking up the Securities and Exchange Commission and creating a panel to investigate unfair foreign trade practices. Investing in the nation’s transportation grid is a fresh attempt to create jobs for a president facing re-election this year amid voter concern about the economy and unemployment at 8.3 percent in January. **Republican congressional leaders rejected the proposal as a political program that wouldn’t do much to curb the deficit** and has little chance of becoming law. Senate Republican Leader Mitch McConnell of Kentucky called the proposal a “campaign document” designed to win votes rather than help the economy. “The president is shirking his responsibility to lead and using this budget to divide,” McConnell said in a statement. “It will make the economy worse.” ‘Gloomy Reflection’ House Speaker John Boehner called Obama’s budget plan “a gloomy reflection of his failed policies of the past” that is “bad for job creation, our economy, and America’s seniors.” Obama “offered a collection of rehashes, gimmicks, and tax increases,” Boehner, a Ohio Republican, said in a statement. Obama said said **the budget plan saves money where possible and spends where needed to bolster economic growth. “I’m proposing some difficult cuts that, frankly, I wouldn’t normally make if they weren’t absolutely necessary,” Obama said** in remarks at Northern Virginia Community College in suburban Washington. “What that allows us to do is to invest in the things that will help grow our economy right now. We can’t cut back on those things that are important for us to grow. We can’t just cut our way into growth.” **Obama proposed increasing spending** on road and bridge **infrastructure** to create jobs. In addition to gasoline tax revenue, transportation spending **would come from a $38.5 billion-a-year transfer from the fund that now goes to war spending. Budget proposals for discretionary spending must adhere to August’s Budget Control Act, which imposed spending caps** that the administration estimates will generate about $1 trillion in deficit reduction over the next decade.

#### No internal link-Tradeoffs don’t crush competing infrastructure

OECD ‘6 (Organisation for economic co-operation and development, “Infrastructure to 2030: TELECOM, LAND TRANSPORT, WATER AND ELECTRICITY”, http://www.inst-informatica.pt/servicos/informacao-e-documentacao/biblioteca-digital/gestao-e-organizacao/0306011E.pdf)

As becomes increasingly clear from the analysis conducted above, developments in one infrastructure sector can have important implications for developments in another. These may be complementary effects, as in the case with the application of satellite and other remote sensing technologies to increasingly sophisticated road pricing or metering of electricity and water consumption. Another example is the role that transport infrastructures have historically played in providing right of way for communication networks. The effect may on the other hand be substitutive, as with the use of telework and teleshopping, although to date the overall impact appears to be relatively limited. The incidence on other infrastructures however may in fact be of a different nature, creating for example situations of close dependency which in times of technical breakdown, natural disaster or malicious attack may lead to cascading disruption of critical infrastructures. Finally, the complexity of dealing with several different infrastructures at once may be an important cost factor. Road construction works for example increasingly have to cross or handle other surface transport modes as well as pipelines for district heating, natural gas supplies, electricity cables and drainage systems. Indeed, the cost of managing such interaction with other types of infrastructure may well prove increasingly burdensome in the future, unless appropriate solutions can be found (e.g. the application of GIS technologies).

#### **Trades-off with defense spending, but that’s not bad**

Society of American Military engineers ’11 (December 21, 2011, “Department Of Defense Anticipates Impending Budget Cuts”, http://militaryengineers.wordpress.com/2011/12/21/department-of-defense-anticipates-impending-budget-cuts/)

With the massive deficits the U.S. government is facing, huge budget cuts are casting dark clouds over the Department of Defense (DOD). As part of his proposed budget for 2012, President Barack Obama plans to spend approximately $924 billion on defense, veterans care and international affairs. This means that budget reductions will equal to about $75 billion per year over 8 years. The cuts are in addition to the already enacted DOD reductions of $45 billion per year over 10 years. Although Defense Secretary Leon Panetta vehemently decried defense cuts, referring to them as devastating measures that “will tear a seam in the nation’s defense,” many supporters of the proposed budget are saying it’s time to roll back on military spending to decrease the government’s massive deficits. Since the early onset of the recession that began in 2008, countless have had to cope with job loss. As Obama tries to restore fiscal responsibility in 2012, he is slashing spending on many areas of the federal government, not just in Pentagon. Charlie Cooper, Baltimore-based activist, Baltimore Sun, said “Shrinking the Pentagon gives the U.S. a chance to bolster education, energy and infrastructure.” Cooper added that “These cuts will not put our security at risk, though they will cut into profits and executive pay at certain defense-establishment corporations.” Though significant budget cuts are looming over DOD, the President’s proposed budget for 2012, which includes more than $1 trillion in deficit reduction, still reflects national defense as one of the major areas that will receive the greatest chunk of federal funds, only bested by health care and Social Security.

### P3 Solves Link

#### Public-private partnerships prevent tradeoff, strapped governments can save money

Garvin ‘8 (Michael J., Ph.D., P.E. is an Associate Professor of construction at Virginia Tech, November, 20, 2008, “Assessing the Effectiveness of Infrastructure Public–Private Partnership Programs and Projects”, http://pwm.sagepub.com/content/13/2/162.abstract)

The public–private partnership (PPP or P3) movement is arguably the most significant, worldwide trend in the public sector. The United Kingdom’s private finance initiative, which began in earnest in 1992, has facilitated the delivery of nearly 800 projects valued at more than £56 billion ranging from car parks to schools to tolled highways to power plants (HM Treasury, 2008). Similarly, in Victoria, Australia’s Partnerships Victoria program has contracted 18 projects representing roughly US$5.5 billion in capital investment since 2000 (State Government of Victoria, 2008). Outside the developed world, the use of private capital for infrastructure projects within emerging economies has become quite common, where financially challenged public administrations look toward the private sector to develop basic infrastructure (Esty, 2003). In fact, a survey of a dozen national governments across the globe in the late 1990s indicated that a significant majority of the respondents expected “that the most successful government structure in 2010 will be one in which government focuses on policy and project/supplier management, allowing the private sector to deliver most traditional public services” (Economist Intelligence Unit, 1999, p. 4). Indeed, the prediction made by the survey’s respondents seems on its way toward realization. Within North America, Canada has seen its fair share of P3 activity within its provinces. A notable project is the Confederation Bridge, which was a design– build–finance–operate arrangement that established a fixed link between the mainland and Prince Edward Island. Another is the lease of the 407 Express Toll Route (ETR), where in exchange for nearly Can$3 billion a private sponsor leased this facility from the government for 99 years. Within the United States, activity in this market has started to pick up. Currently, 24 states and territories have enabling legislation in place that permits some form of public–private initiatives on state transportation projects (US Federal Highway Administration [FHWA], 2008). In addition, the recent leases of the Chicago Skyway and the Indiana Toll Road have attracted the attention of governments to investors (Florian, 2006; Gribbin, 2006). Still, only a few states— Florida, Indiana, Oregon, South Carolina, Texas, and Virginia—are truly active on this front.

#### The government is still involved in P3’s, but no finance is at risk

Garvin ‘8 (Michael J., Ph.D., P.E. is an Associate Professor of construction at Virginia Tech, November, 20, 2008, “Assessing the Effectiveness of Infrastructure Public–Private Partnership Programs and Projects”, http://pwm.sagepub.com/content/13/2/162.abstract)

Given these circumstances, this working definition is proposed for the infrastructure community: A P3 is a long-term contractual arrangement between the public and private sectors where mutual benefits are sought and where ultimately (a) the private sector provides management and operating services and/or (b) puts private finance at risk. Perhaps, the significance of this definition is what it excludes as opposed to what it includes. Notably, this definition excludes both design-build and the transfer or sale of infrastructure assets or services to the private sector. Although presenting some unique challenges, design-build is a modest derivative of the designbidbuild project delivery system, which is the dominant (and often mandated) delivery method for public works projects in the United States. The transfer of an asset or service qualifies as privatization; this distinction is more than semantic. The P3 arrangements are governed by contracts and the accompanying body of contract law. Privatizations are regulated enterprises where the governance and legal structures are quite different.

## Impact

### A2 Bioterror

#### -- No pandemic or extinction – history proves

Easterbrook 3 (Gregg, Senior Fellow – New Republic, “We’re All Gonna Die!”, Wired Magazine, July, http://www.wired.com/wired/archive/11.07/doomsday.html?pg=1&topic=&topic\_set=)

3. Germ warfare!Like chemical agents, biological weapons have never lived up to their billing in popular culture. Consider the 1995 medical thriller Outbreak, in which a highly contagious virus takes out entire towns. The reality is quite different. Weaponized smallpox escaped from a Soviet laboratory in Aralsk, Kazakhstan, in 1971; three people died, no epidemic followed. In 1979, weapons-grade anthrax got out of a Soviet facility in Sverdlovsk (now called Ekaterinburg); 68 died, no epidemic. The loss of life was tragic, but no greater than could have been caused by a single conventional bomb. In 1989, workers at a US government facility near Washington were accidentally exposed to Ebola virus. They walked around the community and hung out with family and friends for several days before the mistake was discovered. No one died. The fact is, evolution has spent millions of years conditioning mammals to resist germs. Consider the Black Plague. It was the worst known pathogen in history, loose in a Middle Ages society of poor public health, awful sanitation, and no antibiotics. Yet it didn’t kill off humanity. Most people who were caught in the epidemic survived. Any superbug introduced into today’s Western world would encounter top-notch public health, excellent sanitation, and an array of medicines specifically engineered to kill bioagents. Perhaps one day some aspiring Dr. Evil will invent a bug that bypasses the immune system. Because it is possible some novel superdisease could be invented, or that existing pathogens like smallpox could be genetically altered to make them more virulent (two-thirds of those who contract natural smallpox survive), biological agents are a legitimate concern. They may turn increasingly troublesome as time passes and knowledge of biotechnology becomes harder to control, allowing individuals or small groups to cook up nasty germs as readily as they can buy guns today. But no superplague has ever come close to wiping out humanity before, and it seems unlikely to happen in the future.

#### -- Tech hurdles prevent bioterror

Mueller 6 (John, Chair of National Security Studies – Mershon Center and Professor of Political Science – Ohio State University, Overblown, p. 24)

Not only has the science about chemical and biological weapons been quite sophisticated for more than a century, but that science has become massively more developed over that period. Moreover, govern­ments (not just small terrorist groups) have spent a great deal of money over decades in an effort to make the weapons more effective. Yet, although there have been great improvements in the lethality, effective­ness, and deployment of conventional and nuclear weapons during that time, the difficulties of controlling and dispersing chemical and biological substances seem to have persisted. Perhaps dedicated terrorists will, in time, figure it out. However, the experience in the 1990s of the Japanese cult Aum Shinrikyo suggests there are great difficulties. The group had some 300 scientists in its employ and an estimated budget of $1 billion, and it reportedly tried at least nine times over five years to set off biological weapons by spray­ing pathogens from trucks and wafting them from rooftops, hoping fancifully to ignite an apocalyptic war**. These efforts failed to create a single fatality**; in fact, nobody even noticed that the attacks had taken place. It was at that point that the group abandoned its biological efforts in frustration and instead turned to the infamous sarin chemical attack.29 As two analysts stress, there have been so few biological (and chem­ical) terrorist attacks because they would require overcoming several **major technological hurdles**. Among them: gaining access to specialized ingredients, acquiring equipment and know-how to produce and dis­perse the agents, and creating an organization that can resist infiltration or early detection by law enforcement." In the meantime, the science with respect to detecting and ably responding to such attacks is likely to grow. Although acknowledging that things could change in the future, the Gilmore Commission has concluded, "As easy as some argue that it may be for terrorists to culture anthrax spores or brew up a concoction of deadly nerve gas, the effective dissemination or dispersal of these viruses and poisons still presents seri­ous technological hurdles that greatly inhibit their effective use.

### A2 Agriculture Impact

#### Overpumping inevitable – native rights are trampled

Kraker 8 (Daniel, “The New Water Czars,” 3-15-8, <http://www.hcn.org/issues/270/14616/print_view>)

**Also, when the Central Arizona Project was initially funded, the federal government saw it as a way to settle the water rights claims of the state’s Indian tribes, many of which were wending their way through the federal courts**. **While this settlement would give the Gila River Indian Community its due, it could cut out the claims of many other tribes, including those of the much-larger Navajo Nation.  That’s because the Gila River deal divides up the Central Arizona Project’s annual allotment** of 1.5 million acre-feet: **The federal government gets 735,000 acre-feet to help settle the state’s Indian claims; the state gets the rest. Nearly all of the federal allocation would already be spoken for**: Almost half of it has been awarded to a number of tribes in the southern half of the state, and the Gila River tribes would get almost all the rest. The deal would leave the feds with only 67,000 acre-feet to divide among the Navajo, the Hopi, the White Mountain Apache, and six other tribes that still have unsettled water rights claims.  **The Navajo Nation alone**, with a 17 million-acre reservation that borders the Colorado River, **may have a claim to many times that amount of water** (HCN, 4/28/03: The Colorado River’s sleeping giant stirs). **And the Navajos arguably are in more dire need of surface water than any other tribe in the state: Nearly a third of the 200,000 people living on the reservation still haul water to their remote homesteads for drinking, cooking and washing. Towns on the western side of the reservation**, including Tuba City and Kayenta, **are projected to run out of groundwater within the next three decades. Thousands of ranchers have been forced to sell livestock because wells have dried up** (HCN, 8/19/02: **Corruption and tragic history paralyze range reform on the Navajo reservation).  "The decision to use such a huge quantity of CAP water in the Gila River settlement is being made in a vacuum**," says Navajo water rights attorney Stan Pollack. The government, he says, is "tying its hands."  For this reason, the Gila River settlement will likely only pass Congress if another bill — a complex trade-off that will send water to the Navajo Nation capital in Window Rock — passes as well. New Mexico Sen. Pete Domenici, R, hopes to have that bill introduced this spring, about the same time Arizona Sen. Jon Kyl, R, hopes to have the Gila River settlement marked up in the Senate Energy Committee. **Water for the eight other tribes in the state with outstanding water rights claims will likely have to come from existing users, predominantly non-Indian farmers, as well as from groundwater, and from the Little Colorado River and some smaller mountain streams.** Of course, many see Indian water settlements, including the huge amount of water the Gila River Indian Community is on the cusp of receiving, as reparation for a **century-and-a-half of failed federal Indian policies**. And therein lies perhaps the deepest irony of all.  Those policies **confined Indians to reservations in the mid-1800s, then divvied up the land and tried to turn tribal members into individual landowners and farmers. The federal government for a century did its best to transform Native Americans into an Anglicized ideal — essentially, happy hay farmers. And now that the Indians are finally taking the government up on that offer, it’s difficult to argue about it. That’s especially true in the case of the Gila River Indians, who have already been farmers for centuries. And what if, years from now, the tribes push to renegotiate the settlement, and sell more of their irrigation water to cities? "If it’s going to be called Indian water**," says McCool of the University of Utah, **"they should be able to do what they want with it."**