

Infrastructure deficit adds up to \$7-10 trillion

by Richard Freeman, Marcia Merry Baker, and Anthony Wikrent

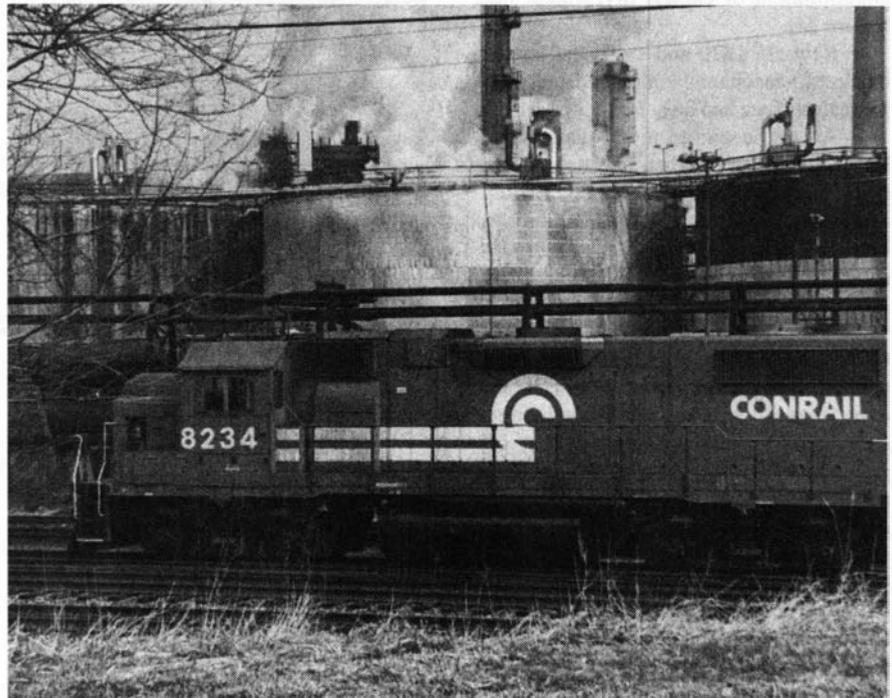
Next to the generation of original discoveries in fundamental scientific and epistemological principle, infrastructure is the most important element in an economy. It transmits technology, being a network grid, into which one can place any of the most important and advanced techniques of farming and industry. Without the infrastructure grid, these technologies could not function.

Think of someone who has made a breakthrough in an industrial process. He goes about to build a factory to manufacture this product, which surely will benefit mankind. But living in a remote area, he then finds that he hasn't the water and power to produce the item, nor the roads and rail network to ship it, nor the workforce with the necessary skills to produce it. It would be as if the breakthrough did not exist, because the inventor hasn't a chance of realizing the idea.

This is true for every product, every factory, and every farm in the country. Not only that, it is infrastructure which is the key ingredient in the household consumer market basket, ranging from water and power, to education and health. The advance of an industrial country over a non-industrial country, is to a significant degree bound up with the idea of advanced infrastructure.

But, unfortunately, infrastructure is one of the items that is most cheated on, and though the first few years of cuts can be disguised, their effect is patently noticeable in the poor functioning of an economy. The "Newtzis" have set their sights on eliminating most infrastructure capital spending, lying that it goes for "wasteful boondoggles." In their warped minds, anything which substantively provides for the future is a boondoggle.

But walk through any rural or small town, or large urban section of America,



The railroad in Clairton, Pennsylvania. The Big Six rail companies have cut back the nation's rail network drastically.

and if one is not wearing blinders, the effect of the infrastructure deficit hits you. Bridges and highways with wires and cables swinging loose, and chunks of concrete falling from them; broken water mains; the lack of water in farm states and in industry, or for basic hygiene; the collapse in the school buildings as well as in content of education; the shortage of hospital beds, no hospitals within easy driving distance, or even doctors, especially in rural and poor urban areas; the lack of access of airline service and the avalanche of deadly air disasters; the breakdown in the ability to ship vital goods quickly and efficiently by rail.

EIR estimates that the infrastructure

deficit in America, which includes costs for making fundamental repairs and replacements in America's infrastructure stock, including building new cities where needed, is between \$7 and \$10 trillion. This will be covered in future issues of *EIR*, but think of the number of productive, high-paying jobs that this will create and the immense challenge that it provides.

The level of infrastructure, in terms of real physical product and content and quality of services, has clearly fallen by half, as the examples that follow show. The snapshots provided here show that the American people are being robbed blind by the lack of infrastructure.

Air transport

ValuJet epitomizes the destruction of America's air infrastructure grid, which has been left in shambles:

- In 1970, the average age of aircraft in the entire airline industry was four years. By 1995, it had more than tripled to 14 years, an abandonment of capital investment (see Figure 34).

- Between 1979 and 1995, the number of aircraft mechanics employed per plane for maintenance had been cut by one-fifth.

- Air traffic control towers increasingly lose contact with flights, because of antiquated computer systems and other equipment failures.

- The deficit in necessary airport construction and repair exceeds \$50 billion.

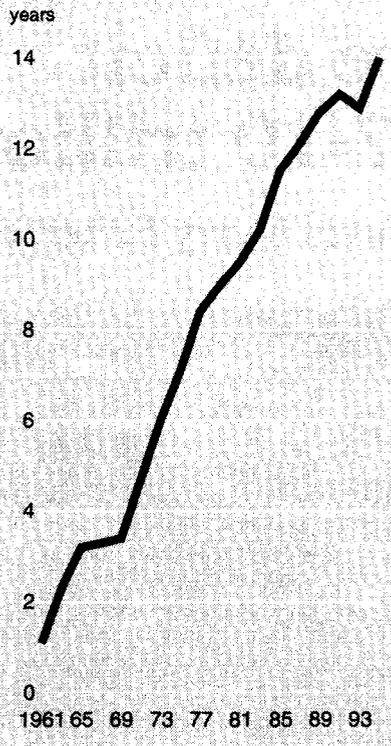
- Whereas, before the airline industry was deregulated in 1979 by President Jimmy Carter and the free enterprise ideologues of the British oligarchy's Mont Pelerin Society, there were often non-stop flights between many cities, or direct flights with only one stopover; today, after deregulation, with the development of airline hubs, a traveller can change planes three or four times before reaching his or her final destination. Now, trips may take twice as long. The time lost in extra travel, costs the American economy tens of billions of dollars annually. And many cities, which previously had service, are now excluded from the air grid entirely, because the airlines don't find it profitable enough to travel there.

'GOPAC airline'

ValuJet, which is known in some quarters as "GOPAC airline" is engaged in making it worse. The crash of ValuJet Flight #592 on May 11 focussed national attention on just how dangerous ValuJet's policies are, and how hazardous and flimsy, America's weakened air transport system is.

ValuJet was founded in 1993 by Chairman Lewis Jordan, and taken public in 1994. But its largest shareholder is the Wall Street investment firm, Gilder, Gagnon, Howe and Co., which owns 8.2 million, or 15%, of the airline's shares. Richard Gilder, the principal of the firm, is a financial angel for Speaker of the House Newt Gingrich; since 1987, Gilder has

FIGURE 34
Average age of jetliners



poured \$320,000 in contributions into Gingrich's political front group, GOPAC. GOPAC is a leading pusher of deregulation, and promotes turning over the American economy to asset-strippers.

After ValuJet was taken public, Gilder and Jordan quickly amassed a fleet of planes, and took every cost-cutting measure to milk the airline. ValuJet made money for its owners in two ways: First, the owners spent as little as possible for its operation, making some money from ValuJet flight operations; second, by making its stock an attractive play on Wall Street, the owners reaped a steep increase in ValuJet's share price, and thus in their own "shareholder" net worth.

ValuJet purchased a fleet of used and aged DC-9 jets at \$2 to \$5 million per plane, a fraction of what investment in a new plane would be. By early 1996, ValuJet had accumulated a fleet of 51 aircraft, with an average age of 26.4 years, more than double the fleet age of America's three largest airlines, American, Delta, and United. ValuJet also cut corners on maintenance, non-aircraft capital costs, and so forth. Everything seemed to be going along beautifully, until

May 11, 1996, when 110 people paid with their lives, as ValuJet Flight #592 crashed into the Florida Everglades. The very plane which became Flight #592 on that day, and crashed, known by its ValuJet tail number 904VJ, embodies ValuJet's corporate strategy. There was serious doubt whether this 27-year-old plane should have been allowed into the air at all, since in the past two years, it had a string of 10 on-board failures, causing it to abort flights, return to base, or carry out emergency landings:

- On Jan. 19, 1996, the plane returned to Atlanta, Georgia due to a lack of air conditioning and cabin pressure.

- On Christmas Day 1995, the plane returned to Washington Dulles Airport when it would not pressurize. It landed 3,000 pounds overweight, and with a damaged door.

- In October 1995, the plane returned to Philadelphia when a warning light indicated the rear door might be ajar.

- In April 1995, it made an emergency landing in Memphis, Tennessee. After encountering turbulence on a flight from Atlanta to Dallas, Texas, the plane began to descend mysteriously, causing oxygen masks to deploy.

- In January 1995, the plane returned to Dulles Airport for repairs to a hydraulic pump.

- In the same month, it returned to Atlanta because of overheating of a speed drive, a unit that provides constant electrical output. The unit was replaced.

- In May 1994, the plane returned to Atlanta after an engine lost 10 quarts of oil, because of a loose oil cap.

Frank Lorenzo's legacy

One would have thought that after the path charted by corporate raider (and destroyer) Frank Lorenzo a decade earlier, an airline like ValuJet would not be granted a license to fly. But just the opposite is the case.

Frank Lorenzo brought the air transport system to its current perilous state, in the wake of the 1979 airline deregulation, which made Lorenzo's depredations the rule throughout the industry: Either an airline followed his lead, or it was faced with extinction. Lorenzo purchased airlines with leveraged buy-out debt financing, provided to him principally by his long-time business associates, Carl Pohlad, heir of the Kid Cann Minneapolis mob; and Michael Milken of the drug-money-linked takeover firm,

Drexel Burnham Lambert. Then, in order to pay for the expensive debt, he slashed the workforce, especially maintenance, sold off planes, and looted assets.

Into the 1980s, Lorenzo, backed by his financial angels, founded non-union New York Air, and gobbled up Continental Airline, People's Express and Frontier Airlines. In 1986, he took over Eastern Airlines, one of the crown jewels of the American air system. He placed all these airlines under his holding company, called Texas Air. When the dust had settled, through hostile takeovers, Lorenzo's Texas Air had become America's largest airline, and, internationally, was second only to the Soviet state-owned Aeroflot. It handled one-sixth of all U.S. passenger traffic. It now employed over 50,000 workers, with 451 planes, and was earning \$7 billion in annual revenues.

But Lorenzo paid dearly for his high-roller hostile takeover game. By 1988, Texas Air's debt exceeded \$5.5 billion, with very high interest rates, some as high as 17.25%. By 1988, Texas Airlines was falling apart. Lorenzo was stripping the assets of Eastern Airlines, the capstone of the Texas Air "ponzi" scheme, selling off its Kansas City hub, various planes, and looting out cash. According to the estimate of Farrell Kupersmith, an accountant for the Touche Ross accounting firm, between 1986 and 1990, *Frank Lorenzo successfully made off with \$750 million of Eastern's assets.*

By March 1989, Eastern Airlines was placed into bankruptcy. In 1990, a bankruptcy judge deposed Lorenzo as Eastern's owner. On Jan. 18, 1991, a hemorrhaging Eastern, having lost more than \$1 billion, and having been shrunk by 80%, was liquidated and permanently closed. Three days later, a separate bankruptcy court liquidated Pan American World Airways. Pan Am, like Eastern, was one of the pioneer airlines, dating back to the 1920s. By 1992, airline deregulation had resulted in 117 U.S. airlines filing for bankruptcy.

Lorenzo, deregulation, and Wall Street had wrecked the airline grid.

Over 1990-94, the airline industry lost \$13.1 billion. This loss was equivalent to the cumulative profits that the airline industry as a whole had earned from 1920 until 1978. The losses meant that the industry, on balance, paid no taxes for these years, and, because of carried-forward losses, may not pay them for a few more years. With such large losses, investment was cut back for maintaining the essentials of planes and the transport grid.

The rail grid

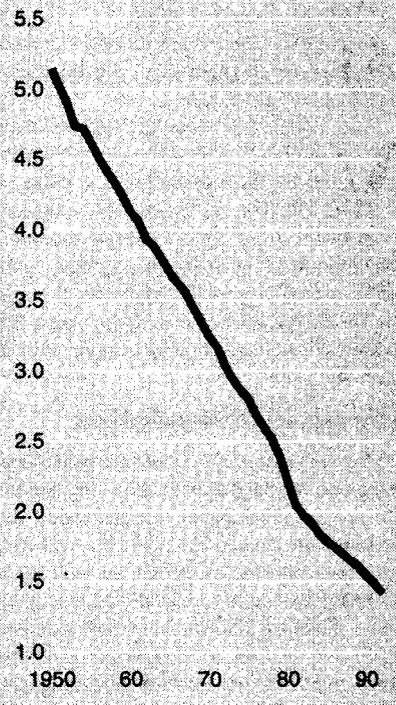
On March 4, thirty-seven cars out of the 89 cars on a Wisconsin Central Ltd. freight train derailed in the town of Weyanwega, Wisconsin. The train was carrying 15 propane tank cars, containing 1 million pounds of propane, shipped liquefied and under pressure. One of the tank cars exploded into flames, creating a huge fireball and destroying a nearby feed mill. Three more propane tank cars rapidly caught fire, igniting buildings along the path of the train. Crews trained in fighting oil well fires were brought in from Texas, and painstakingly built an earthen pit, in which to siphon off and safely burn non-ignited fuel. The town's 1,700 residents were asked to abandon their homes, for five to seven days; it took five weeks before they were allowed back home.

The Wisconsin Central derailment was only one of seven critical rail accidents, claiming more than a dozen lives and causing over 50 injuries, in the month between Feb. 1 and March 4 of this year, when cold and other conditions put added stress on our nation's failing rail grid. In August, a derailment involving more than 30 cars, closed rail traffic for a few days between Alexandria, Virginia, and Richmond, Virginia, choking off goods traffic for many other points north and south.

The fact is that America does not have a rail system to move goods, or people, commensurate with either its real needs, or with even what existed 30 years ago. The rail cartel, run by the British financier oligarchy and referred to as the Big Six—Union Pacific, Southern Pacific, CSX, Norfolk Southern, Burlington Northern Santa Fe, Consolidated Rail (ConRail)—have been engaged in an intensified program of ripping up the nation's rail grid. In 1929, America had 229,530 route miles of track in operation; by 1995, it was down to 109,332 miles. Between 1950 and 1995, on a per-household basis, the Big Six have reduced America's Class I carrier road mileage by 73% (see **Figure 35**). Few forms of infrastructure have been cut so sharply.

But right alongside the cut in Class I carrier track mileage, there has been carnage in every other aspect of rail activity, especially since President Jimmy Carter orchestrated

FIGURE 35
Railroad mileage per
1,000 households



the deregulation of America's rail grid through the 1980 Staggers Act, named after Rep. Harley Staggers (D-W.V.).

Railroad to nowhere

As for the other parameters:

- In 1980, there were 458,000 railroad workers employed; by 1994, there were only 190,000; 59% of the rail workforce had been axed. Many workers 50 to 65 years old, were forced into early retirement; most were skilled, such as engineers or trainmen, with 30-40 years experience. In an insane drive to squeeze out profits, rail crews of four workers per train, have been reduced to three and even two workers. All of this contributes to a decrease in safety.

LeRoy Jones, national legislative representative and executive vice president of the National Brotherhood of Locomotive Engineers, reported in a Feb. 29 interview, "When you remove workers, you remove an extra set of eyes on the train. When you travel, that becomes extremely important, because often an engineer can't see everything because of all he has to do." Moreover, he stated that to compensate for so many layoffs, the remaining workers are worked long hours. They could be told to work 60- to 70-hour weeks, back-to-back double shifts, and

irregular hours. "You can be called to work one day at noon, then the next day at 9 a.m., and the following day at 9 p.m., to work through the night. Your body gets messed up. It's like having constant jet lag."

- In 1980, there were 28,094 locomotives in operation; today, the figure is 18,505, a plunge of 34%.

- In 1980, there were 1,068,114 Class I carrier-owned freight cars in operation; today, that is down to 590,930, a collapse of 45%. The loss in freight-car capacity cripples the food chain: During the summer and winter of 1995, grain piled up on farms and at silos in the Midwest. It could not be delivered because there were not sufficient rail tankers and hopper cars to move it.

Effects of deregulation

The passage of the "free-enterprise" rail deregulation was the excuse for the bankers and the Big Six cartel to restructure the industry to maximize speculation and short-term returns on profit, as well as to deliberately create chaos in the rail grid. The Interstate Commerce Commission (ICC) was created in 1887, which gave the rail service a mission of building the nation. Rate-setting bureaus, in which railroads participated under the supervision of the ICC, set rail rates at levels that allowed a owners to earn a return that covered capital and operating costs, including a fair wage to labor, and some profit, for technological improvement and expansion. The railroads had to agree on a rate for a particular zone of the country, and get the ICC's approval. The railroads had to agree to serve customers, no matter how small, in every region of the country, at the same rate that was offered to large, influential customers.

Nearly a century later, after deregulation, a railroad company could raise its rate as much as 180% of its operating cost, without getting prior ICC approval. It only needed approval, if it went above that level. A spokesman for the Association of American Railroads (AAR), which represents the Class I carriers, explained on Feb. 28, that 130% of operating costs is breakeven. So, 180% is more than 38% above breakeven.

An AAR spokesman explained on March 3 that, prior to 1980, no specific rate of return was aimed for, but records show that an average annual return on net investment of 5-7% was achieved in years which did not have significant economic downturns. He said that today, the industry

is shooting to get an industry-wide 12.2% rate of return, double the level of the 1970s. In 1995, the rail industry was the favorite of Wall Street, as rail stock prices rose 20%.

Worse, there are entire sections of the country, where farmers, businessmen, and manufacturers can no longer get rail service. Rail service is the largest hauler of freight, in both tons and ton-miles, in America. The efficiency of the system is a determinant of the cost of product delivered and of the efficiency and output of all factories and farms. This technological capacity simply no longer exists.

Bridges

One-third of America's 574,671 bridges that are at least 20 feet long, are rated as "deficient" (Table 4). Many of these bridges are badly in need of extensive repair; thousands need emergency replacement. Based on statistics provided by the Federal Highway Administration of the Department of Transportation, 107,435, or 18.7%, of the nation's bridges are "structurally deficient"; an additional 79,124, or 13.8%, are classified as "functionally obsolete," which means they can't handle today's traffic volumes. Together, the two types of

deficiency comprise 32.5% of the nation's total.

Bridges are ingenious structures for crossing rivers or covering distances of up to several miles; because of the brilliant way they are harmonically organized (with many using suspension cables shaped like catenaries), they can support great weight and withstand tremendous stress. Without adequately maintained and safe bridges, America's goods conveyor belt breaks down. Goods delivery and commerce by truck, as well as passenger travel, for all but the shortest distances, would be impossible. Annually, 24% of goods' ton-miles transport is carried out by truck. Most trains, which are the greatest carriers of goods, cross bridges on their daily routes.

That's if they are properly maintained. If not, bridges are death traps.

To deal with the problem, the FHA rates all the nation's bridges on a sufficiency scale from 0 to 100. There are 20,481 bridges, about 4% of the nation's total, that have a sufficiency rating below 20, which is equivalent to between "critical" and "imminent failure." Just 996 of these bridges—that is, 5% of the affected bridges—have been granted repair or replacement funds. Yet, most of these bridges are still in operation.

Worse, 4,534 bridges—nearly 1% of the national total—have a sufficiency rating less than 10. Lest one think that these endangered bridges are in the middle of



A collapsed bridge in West Virginia. One-third of American bridges over 20 feet long are rated "deficient."

TABLE 4

One-third of U.S. bridges are deficient

	Number of bridges	Percent deficient
New York	17,308	63%
Washington, D.C.	239	60%
Massachusetts	5,021	58%
Hawaii	1,070	53%
Rhode Island	734	49%
West Virginia	6,477	47%
New Jersey	6,209	46%
Missouri	22,940	46%
Pennsylvania	22,327	44%
Vermont	2,653	42%
Mississippi	16,725	41%
Oklahoma	22,710	40%
New Hampshire	2,281	38%
Louisiana	13,664	38%
North Carolina	16,085	37%

Source: U.S. Department of Transportation, Federal Highway Administration, "The Status of the Nation's Highway Bridges," June 1995.

nowhere, and don't affect many people, consider a few of the bridges ranked in this category:

Major urban routes

- The Williamsburg Bridge in New York City, with a sufficiency rating of 2. Built in 1903, the bridge carries 95,000 vehicles a day, making it one of the most-travelled bridges in America.
- The Columbia Pike in Arlington, Virginia. Built in 1944, this bridge carries a daily traffic of 56,000 vehicles. It has a sufficiency rating of 2.
- The Presidio Viaduct in San Francisco. Built in 1936, it carries 103,000 vehicles daily—and has a sufficiency rating of 2.

In 12 states, 40% or more of their bridges are rated as deficient. On a state-by-state basis, New York State's bridges are in the worst condition, with two out of every three bridges deficient. Washington, D.C. is a close second. The 15 states with the worst records are also shown in Table 4.

The Federal Highway Administration estimates that \$53 billion a year is required just to *maintain* current road and bridge conditions, and another \$72 billion a year to make improvements, a total of \$125 billion. Under the current fascist budget-balancing mania, annual spending for the combined functions is only \$35 billion.

Water infrastructure

Over the past 25 years, U.S. water infrastructure has not been expanded and repaired at rates to provide for needed economic purposes (industry, agriculture, residential, navigation, flood control) in terms of amount, quality, and distribution. Since 1980, less water is flowing through the U.S. economy as a whole, in both absolute volume, and in per-capita, and per-economic sector terms. The graphs summarize key features of how the U.S. economy is "drying up."

Figure 36 shows that U.S. total daily water withdrawals (water engineering term for water diverted for use, from streamflow, groundwater, and any other sources) grew each year from 180 billion gallons per day in 1950 up to 440 bgd in 1980. Then total daily withdrawals fell back to 399 bgd in 1985; and stayed at 408 bgd in 1990 (the latest year for which data is available from the U.S. Geological Survey).

Figure 36 also differentiates major uses of

water in the economy. Since the 1970s, less water is being used for industrial purposes (hatched tone at the top), for thermoelectric power uses, and for irrigation. Over the past 25 years, water use continued to increase for residential use, and for what the data source lists as "rural domestic and livestock," most of which reflects non-urban residential use.

On a per-capita basis, the overall decline in water in use in the economy (Figure 37) shows up as a dramatic decline since about 1975. To put this in perspective, note that the U.S. economy in 1900 averaged about 500 gallons per day per capita overall, which rose to nearly 2,000 as of 1975, and has fallen ever since.

Figures 38 and 39 show what this means for industry and agriculture. Over the 1950s and 1960s, daily average water use in U.S. industry per capita varied, but mostly stayed at a level of 240 gpd, reflecting the impact of certain technological advances in obtain-

FIGURE 36
U.S. water withdrawals, by sector

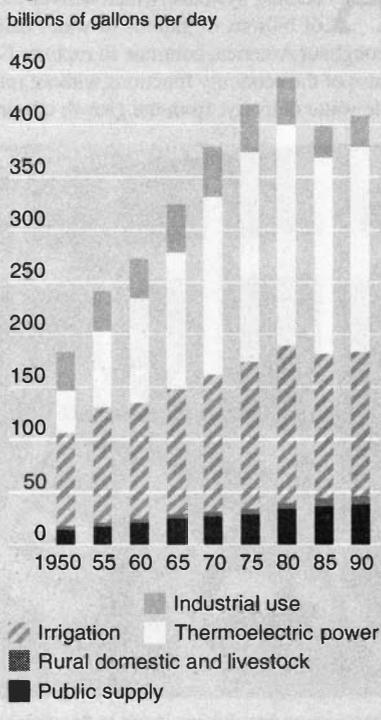


FIGURE 37
Per-capita water withdrawals

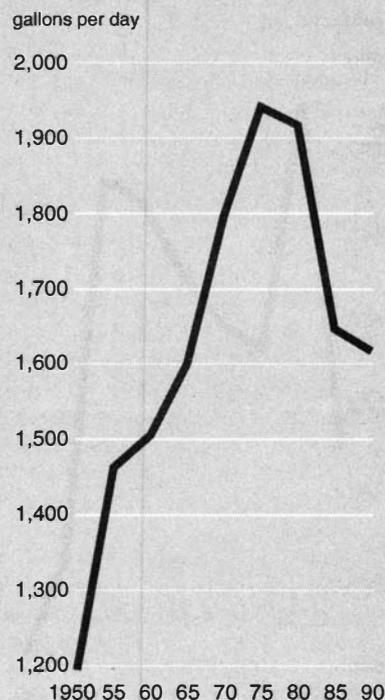
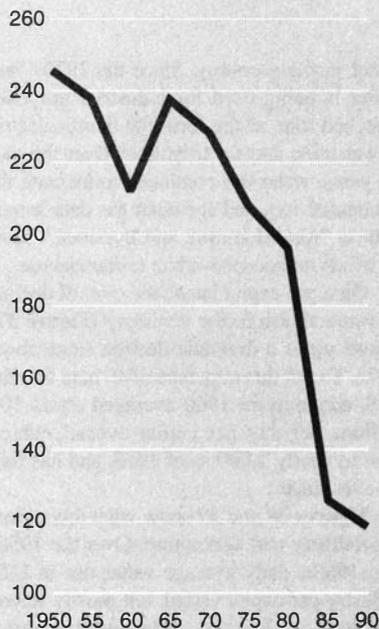


FIGURE 38
Per-capita water withdrawals for industrial use

gallons per day



ing more output of product per unit input of water required. However, the dramatic decline of water in manufacturing, as a per-capita ratio, from the 1970s to the present, reflects the shutdown of U.S. industry.

The use of irrigation water, in Figure 39, likewise shows a sharp decline from a high of 653 gallons per day in 1980, down to 543 gpd in 1990.

These drops in water use directly reflect the way that the U.S. market basket for consumption has been made dependent on foreign water utilization associated with the imports of goods and food. For example, it takes 10,000 gallons to produce an automobile; it takes about 26,450 gallons to tan a ton of hides for shoe leather; it takes, on average, 6,340 gallons, to produce a ton of fruits, vegetables, and juices. Multiply these water factors by the number of cars, the shoes, and food being imported into the United States and you see how the U.S. is "getting by" with using less and less water in the economy: by looting foreign trade partners, and cheating the future.

Water systems

Ancient water mains and water-processing systems, which deliver tens of billions of gallons of water daily throughout America, continue to rupture. No phase of the economy functions without reliable water delivery: from the growth of agri-

culture to the working of industry, from the social prevention of disease to personal biological survival.

Some of the worst ruptures in water systems throughout every part of the country occurred during the "cold snap" of the winter of 1994. Examples include:

- On Jan. 21, 1994, a pre-Civil War, 138-year-old water main burst in Brooklyn, New York, creating a gaping crater at the intersection of Fourth and Clinton Streets that looked as if a meteor had hit the street. The escaping water formed a winter lake that ran over four blocks, flooding and damaging dwelling units along the way. In turn, the flood undermined and broke a gas line. Hundreds of families lost power, water, and heat. The nearby Battery Tunnel had to be closed for over 10 hours.

- In Philadelphia, the ruptures of aging water mains became so frequent that the water system was losing 100 million gallons of water a day, equal to the water supply of several medium-sized cities. By Jan. 24, 1994, the city reservoir system's water supply had plunged to one-third of its required 1 billion gallon level. In response, Philadelphia's water utility cut supply down to a trickle for 547,000 of its citizens, and shut off water altogether to others.

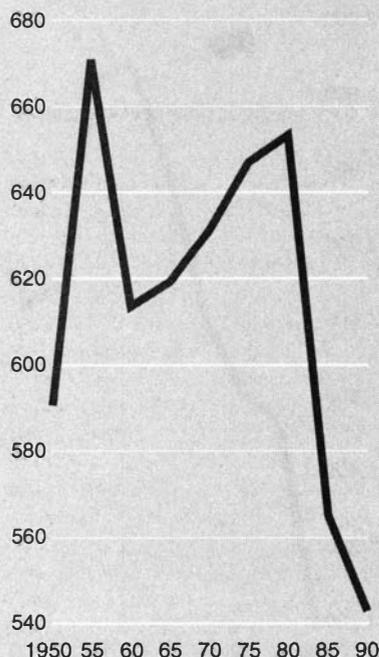
- Even on a normal basis, the water system of Boston, through leakage, loses billions of gallons of water every year.

No action on a national plan

The water delivery system in the United States comprises 436,000 miles of pipes, enough to encircle the circumference of the Earth more than 15 times. Each year, there is

FIGURE 39
Per-capita irrigation water use

gallons per day



Infrastructure breakdown leads to flooding in downtown Chicago, April 1992.

one break for every 3.7 miles of installed water main, adding up annually to over 117,000 miles of broken water piping. U.S. public works projects replace only 2,300 miles of pipe per year—less than 2% of the broken mileage.

The lack of commitment to funding for infrastructure is the cause of this problem. The lack of funding itself is caused by 1) the depression, which has dried up tax revenues on both federal and local levels, and 2) the widespread acceptance of the budget-cutting mentality typified by Wall Street darlings Sen. Phil “Landfill” Gramm (R-Tex.) and Newt Gingrich. This ideology views improvements and even maintenance of infrastructure as less important than so-called “cost-efficiency” accounting.

Take the old cast iron pipes in the nation’s water systems that, when corroded, can handle neither the temperature nor pressure stresses. Some 48% of the nation’s water main system is cast iron; the percentage in older cities is 70-90%, where the iron pipes on the East Coast and Midwest range from 100 to 140 years old.

Newer forms of ductile iron, that can withstand many of the problems described above, do exist. But, installing just one mile of the more elastic ductile iron in densely populated areas can cost \$1 million. This places the true unpaid bill, for just replacing the cast iron pipes at \$210 billion, not including the cost of replacing or repairing ductile iron pipes that have corroded.

Cortez White, general manager of the Washington Suburban Sanitary Commission in the District of Columbia, which covers a 4,700-mile system, reported, “In 1986, we identified \$700 million worth of projects we considered critical, but the number grew so big we don’t even calculate it any more. We just don’t have the money to do it,” he said (emphasis added). The commission experiences, on average, 1,200 water main breaks a year.

Harmful microbes, including the potentially deadly *cryptosporidium*, were found in the Milwaukee water system in 1993, and were suspected in the Houston and Washington water systems. This comes from not regularly cleaning pipes or valves. The last time the valves in Washington were even systematically tested was 20 years ago.

At the current rate, most area utilities replace only about a dozen miles of pipe each year, which means that it would take more than 200 years to rebuild each area’s water supply system: In reality, they won’t last that long.

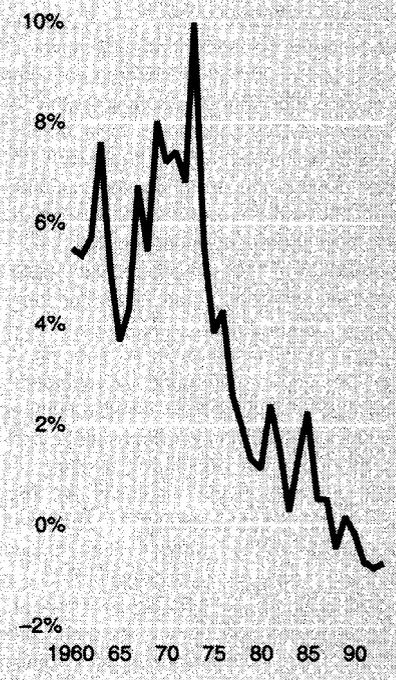
The power grid

In 1978, net additions to U.S. electricity generating capacity (Figure 40), measured on a per-capita basis, fell below an annual rate of change of 2%, for the first time since 1947. This only marked the midpoint of a collapse that began in 1974, when the rate of change in net additions to generating capacity fell to 5.53%, from 9.97% in 1973. In 1988, there were *no* net additions to per-capita generating capacity; in fact, this measure of energy actually began to shrink, declining by 0.46% that year, and becoming even worse in subsequent years, with a rate of collapse approaching a full 1% annually in 1991 through 1993.

This decline in the United States’ ability to produce sufficient electricity per capita, comes at the same time that per-capita consumption of electricity continued to increase, albeit at a rate in the 1980s and 1990s that was less than half the average of 7% recorded in the 1960s. What this means is that the reserve margin of electricity-generating capacity, is rapidly eroding. While the electric utility industry would generally like to have a reserve margin of 17% to 24%, to meet peak demand (for example, in extraordinarily hot or cold weather), and to handle unforeseen plant shutdowns, some areas of the United States now have reserve margins of 10% or less.

It has become nearly impossible for utilities to bring new power plants online in a reasonable amount of time, because of the irrational demands of the organized environmentalist movement, and the looming deregulation of the industry, which will end the public policy mandate of the utilities to supply reliable electric power at reasonable prices, in return for a monopoly and a guaranteed modest rate of profit. It is well known that over 100 nuclear power plant construction projects have been cancelled since the mid-1970s; it is less well known that 80 baseload coal-fired plants have also been cancelled. It is symptomatic of the U.S. economic takedown, that the economy now relies on aging facilities such as the Conowingo hydroelectric plant on the Susquehanna River, northeast of Baltimore. The largest hydroelectric plant on the U.S. East Coast, Conowingo’s main turbines were installed in the 1920s, and

FIGURE 40
Annual change in per-capita electric generating capacity



are still in use.

Danger: utility deregulation

The blackouts on the U.S. West Coast on Aug. 10 point to the dangers of deregulation, which will force transmission lines originally designed for the local distribution of electricity between power plants and homes, offices, and factories, to be used as “highways for large bulk transactions,” according to Paul McCurley, manager of power systems for the Edison Electric Institute. In its 1991 Annual Report, the North American Electric Reliability Council (NERC), which has nine regional councils, warned that legislation being considered by Congress (supposedly to “foster competition in the electric utility business”) would allow the “mandated use of [transmission] facilities by someone other than the owners. Mandated transmission services could prove fatal to the standards of reliability the public deserves and expects.”

Health and education

There are some 80,000 schools in the U.S. public education system. Based on a recent survey, up to 60% of them are in need of serious repair.

In February 1995, the General Accounting Office of the U.S. Congress issued a report on the first national survey of the physical condition of schools conducted since 1965. The GAO's report, designed for the Department of Education's 1994 "School and Staffing Survey," was sent to over 5,000 school districts, inquiring into the condition of 10,000 of the nation's 80,000 schools. Some 78% of the districts responded.

One-third of U.S. schools require "extensive repair or replacement of one or more buildings." Almost 60% of U.S. schools have one major building which needs "to be extensively repaired, overhauled, or replaced." About half of U.S. schools report having at least one unsatisfactory environmental condition, such as poor ventilation, heating, or lighting, or poor physical security. An estimated \$112 billion is needed to repair and upgrade U.S. school facilities to a satisfactory condition, and give America's children a proper and functioning learning environment.

Many school officials told the GAO that their districts have been forced to defer "vital maintenance or repair expenditures from year to year due to lack of funds"; they cite the refusal of citizens to accept new taxes or pass new bond issues to generate the funds required to provide children with an acceptable learning environment. In fact, the erosion of the job and tax base for local and state revenues of all kinds is reflected in the citizens' "revolt" against school bonds.

In a second report in April 1995, the GAO focused on the capability of the nation's schools to provide proper forums for the teaching of skills needed for the 21st century. About 40% of U.S. schools do not have proper laboratory facilities in which to convene science classes. Some 14 million American students are thus deprived of a decent science education. One-quarter of the nation's schools do not have enough computers for students, and over half of all schools lack modems for their computers to communicate with outside resources. In other computer infrastructure, 61% lack sufficient phone lines for instructional use; and 46% lack proper electrical wiring for modern

computer and communications equipment.

For example, an elementary school in Ramona, California reported that it has only two electrical outlets in each classroom, and that circuit breakers are tripped when four teachers attempt to use their outlets at the same time.

The \$112 billion estimate of the GAO is probably far less than what would be required if a serious revamping of the nation's school systems was launched as part of economic emergency measures. Thousands of new facilities should be built, "from the ground up." Every U.S. city operates with school facilities that were built during the 1920s and 1930s public works programs, and which should have been replaced beginning in the 1970s. The GAO found some school buildings were over 100 years old!

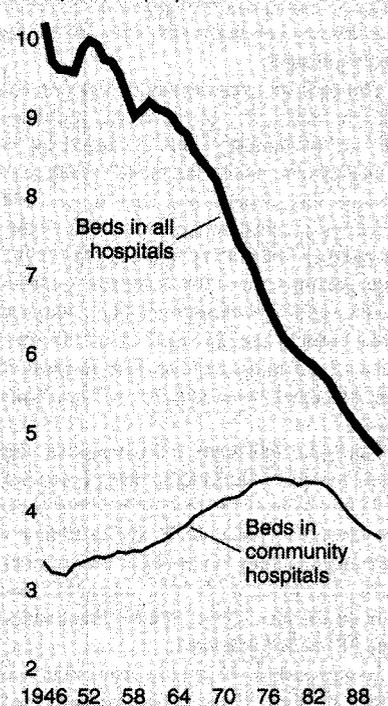
Many schools built in the 1960s and 1970s were designed to have a useful life of only 20 to 30 years, and are sometimes in even worse physical condition than schools that are much older. A particularly glaring problem are the temporary classrooms that many schools erected to handle the baby boom in the 1960s. These portable classrooms are basically mobile homes set on concrete pads, and were designed to last 10 years. However, many schools are still using these temporary classrooms 20 to 30 years after they were erected—even though they are now in terrible condition, literally coming apart at the seams.

Too few hospital beds

Figure 41 shows a basic marker of adequacy of health care facilities in a nation—the number of hospital beds per 1,000 people. As of the 1990s, the national average number of beds per 1,000 in the United States, around 3.7, is way below the standard of what modern medicine can provide, and for many locations, far below the conditions prevailing before World War II, when appendicitis, maternal childbirth deaths, and other mortality rates claimed lives for no reason except the absence of hospitals.

In 1946, when post-war legislation (the Hill-Burton Hospital Survey and Construction Act) was passed, there were about 3.5 community hospital beds per 1,000 Americans, and 10 beds of all types (mostly reflecting the polio wards, and tuberculosis infirmaries). Hill-Burton set a goal of a bed ratio of about 5 to 5.5 community hospital beds per 1,000, and

FIGURE 41
Hospital bed availability
beds per 1,000 people



accordingly set off a construction mobilization. At the same time, applied medical research all but eliminated TB and polio.

In the early 1970s, a level of about 4.5 beds per 1,000 was reached, close to the 1940s Hill-Burton goal. A hospital stay was relatively affordable, and the facilities were available. As of the 1970s, many more medical procedures were done on an outpatient basis, relieving the need for beds; but, balancing this out, many new medical procedures had been developed, unheard-of in the 1940s, such as hip and knee replacements, new types of heart surgery, and organ transplants. These latter advances required in-hospital stays.

Then, over the past 25 years, the hospital bed ratios were downgraded, dropping from about 4.5 beds per 1,000, back down to 3.7. At the same time, specialty beds ratios are also falling, even though needed for AIDS, TB, and other new and resurgent diseases.

What this national decline in bed ratios signifies, is that in many inner city locations and most rural counties, out of the 3,089 counties in the United States, the beds, equipment, and medical staff do not exist at the ratios needed to maintain public health and prolong life. There are locations in Alabama, where a woman faces driving five counties away to deliver her baby in a hospital.