

APRIL UNIT STUDY PAGES

Aging Infrastructure Discussion material

A 2017 Report Card gave a D+ grade and called for a \$3.6 trillion dollar investment by 2020 to repair the nation's infrastructure according to the American Society of Civil Engineers (ASCE). While Infrastructure can refer to a variety of structures, in this material aging infrastructure focuses on, pipes/pipelines including water, 'sanitary' sewer, storm sewer, roads, bridges and transit including public rail and buses. Much of American's roads, pipes, buses and passenger rail, are paid for by and are publicly owned and financed. They are in need of repair and updating. Not caring for these systems has consequences for public safety and the economy.

Some of the criteria used by ASCE to evaluate and grade infrastructure categories include: capacity, condition, funding, future need, operation and maintenance, public safety. With delayed maintenance and underinvestment, most categories averaged Ds since 1998. The report calls for increased investment in U.S. infrastructure from all levels of government and the private sector to 3.5% of U.S. Gross Domestic Product (GDP) by 2025. The investment should include: dedicated public funding, raising the motor fuel tax, programs to improve specific categories of deficient infrastructure and rates and fees that reflect the true cost of using, maintaining, and improving all infrastructure. ASCE <http://www.infrastructurereportcard.org/state-item/ohio/> Key Facts About Ohio's Infrastructure)

Government has been involved in infrastructure from the beginning of the country recognizing the essential role in promoting projects of benefit to all: the transcontinental rail road to the interstate highway and roads and bridges. Federal infrastructure investment has decreased from 1 percent to 0.5 percent of GDP over the past three decades.

The 2016-17 Ohio Department of Transportation (ODOT) budget allocated \$60 million or 2% to public transportation, 85% from federal sources. Replacing aging infrastructure especially bus replacement is one of transit's greatest needs. In Ohio an estimated \$26 billion over the next 20 years is needed for upgrades and modernization improvements to the state's water and sewer systems.

While some federal and state money is available for infrastructure repairs and renovation especially for transportation, local governments have access also to sales and property taxes, loans, grants, bonds and fees for capital improvements. (A Capital improvement is a permanent structure which will last for three to five years or more.)

Ohio River locks and some dams are operated by the Army Corps of Engineers and managed by Ohio Department of Natural Resources. www.ohiodnr.com Dam Safety Report 2009

PIPES

The municipally owned and operated Greater Cincinnati Water Works (GCWW) currently serves the City of Cincinnati, most of Hamilton County and parts of Butler and Warren County and sells water to parts of Boone County and Florence, Ky. GCWW is responsible for water quality and infrastructure including treatment plants and must comply with the standards of the Safe Drinking Water Act. Water Works is funded by fees and issues Water System Revenue Bonds. Rates are determined by the water used and a base charge for connection to the public water system. Aided in part by technology (e.g., low flow shower heads) people are using less water which reduces the revenue to finance operations and capital needs. Infrastructure needs in addition to regular

maintenance include replacing old pipes especially those containing lead, repairing leaks and breaks, and upgrades to the treatment plant.

The City's Stormwater Management Utility (SWU) is a division of GCWW. SWU safely captures, controls, and conveys storm water runoff in the City of Cincinnati and is funded by ratepayers within the City. Hamilton County's Storm Water Drainage System reviews, regulates, and approves storm water management for new development in unincorporated areas of the County. Hamilton County's Storm Water District membership includes the 12 townships and 39 of the 49 jurisdictions in the County. Storm water management must comply with federal discharge requirements.

The Metropolitan Sewer District of Greater Cincinnati (MSD) provides wastewater collection and treatment for 43 political subdivisions of Hamilton County and portions of surrounding counties. Formed under a 50 year Agreement between the City of Cincinnati and Hamilton County known as the 1968 Agreement, the Metropolitan Sewer District is managed and operated by the City and the Board of County Commissioners establishes sewer service charges, adopts rules and regulations and approves the operating and capital improvement program budgets. The Agreement expires April 30, 2018. Sewer rates are based on the amount of water used in a monthly or quarterly period and a service charge known as a minimum base charge.

Out of concern for rate payers experiencing escalating sewer rates, Hamilton County Commissioners are reviewing the May 2016 recommendations made by a Hamilton County Rate Affordability Task Force convened in Fall 2015.

There are storm sewers, sanitary sewers (waste water) and combined sewers containing storm water and waste water in the same pipe. Heavy rain events can exceed storm sewer pipe capacity and cause the combined sewers to overflow into nearby rivers and streams. Each overflow event is called a Combined Sewer Overflow (CSO). The untreated waste water contaminates those waters, causing economic and health problems and violates the Clean Water Act. Storm water is the precipitation that flows over surfaces and is considered the largest pollutant to waterways in the U.S.

Yearly billions of gallons of raw untreated sewage mixed with storm water overflow from MSDs combined system into rivers and streams, backs into homes and businesses and overflows from the sanitary sewers. To bring the MSD into compliance with the Clean Water Act, the City of Cincinnati and Hamilton County entered into two federal Consent Degrees. The improvement plan known as Project Groundwork pledges to reduce or eliminate sewer overflows by the annual removal of 1.78 billion gallons of CSOs from the Mill Creek by 2018. The cost is \$244 million in 2006 dollars for the construction of storm water detention basins, new storm sewers and restoration or daylighting of storm water and natural drainage flows among other projects to be completed by 2018. A second Phase estimated to cost about \$1.2 billion in 2006 dollars will be construction projects in a wet weather plan to be submitted by August 31, 2017.

See the Cincinnati Area League of Women Voters review of issues surrounding MSD in 2016:

http://lwvcincinnati.org/files/metropolitan_sewer_district_2016_03_study_pages.pdf

Water and sewer systems are funded almost solely by ratepayers. Funding for Project Groundwork is from rate payers through sewer bills. The Ohio Water Development Authority makes loans or grants to government agencies for stormwater management projects, and loans for construction projects to improve water quality among other water programs. Ohio EPA has several programs that offer below-market rate loans to eligible public water systems to fund improvements to eliminate public health threats (Lake Erie algal blooms) and ensure compliance with federal and

state drinking water laws and regulations. With different applications, funding criteria and timelines, navigating multiple state and federal funding sources is difficult.

Transportation:

Forty-two percent of America's major urban highways are congested wasting time, an economic drain, and fuel and contributing to accidents. An annual estimated \$170 billion in capital investment would be needed to improve conditions and performance according to the Federal Highway Administration. Nineteen states are generating new revenue sources for surface transportation infrastructure many with community input.

In Hamilton County of the 421 bridges the one of primary concern to the region is the Brent Spence Bridge. While it is structurally sound, daily it carries 186,000 vehicles on a span opened in 1963 designed to carry 80,000. It is a congestion point as I-71/75 crosses the Ohio River between Cincinnati, OH and Covington, KY and accidents rates are increasing. A recent inspection indicated more rust; bigger cracks and holes, decaying concrete and a grade of C-minus. Drainage pipes on the bridge have disintegrated. A \$38 million rehabilitation project has been planned by the Kentucky Transportation Cabinet. The estimated cost to replace the functionally obsolete bridge is \$2.6 billion. Suggestions to pay for a new bridge with toll revenue received strong backlash from politicians in Kentucky. Kentucky Governor Matt Bevin has authorized a one year \$2 million study to re-evaluate the Brent Spence corridor plan and consider options including a financing plan. A report is due late September 2017.

The Western Hills Viaduct is another large structure that needs to be replaced. Built in 1930 -32 as part of the Union Terminal project, it spans the Mill Creek, the CSX Queensgate yard and local roads. At a half mile long it is twice as long as any of the Ohio River bridges and connects Harrison Avenue to Central Parkway carrying more than 70,000 vehicles daily. It is structural deficient, continues to deteriorate and is functionally obsolete. The most recent estimate to replace the Viaduct is \$310 million. It is owned by the County and maintained by the City. Federal and state funds are being sought for its replacement.

The Marburg Avenue Bridge just south of the intersection with Wasson Road in Hyde Park is owned by Hamilton County and maintained by the City of Cincinnati by contractual agreement. It is one of 26 such bridges within the City. It carries 14,000 vehicles a day. It is near the end of its design limits, has a rating of 4 (poor condition), and is structurally deficient with deteriorating concrete. Construction for a replacement bridge is scheduled to begin March 2017 with state and federal grant monies and Hamilton County Municipal Road Funds.

Springfield Township has adopted a five-year plan for infrastructure including: funding a sidewalk program, using state grant money for street replacement for streets in failed condition and use of road fund, general funds, and county grants for repairing township streets. Intermediate repairs on streets in good or fair condition will be done to prevent sliding into poor condition. And there will be an assessment for homeowners on streets needing repairs to help pay for the work. The township is responsible for township roads not state routes such as Winton Road or the county roads: Gailbraith or Daly. (Jennie Key. jkey@communitypress.com. "Springfield Twp. Residents to pay for street repairs" The Enquirer. Saturday, February 11, 2017.)

In Colerain Township stormwater work is scheduled on Pippin Road and Springdale Road. Some intersections of Pippin Road will be widened for turn lanes, and curbs, gutters and reconstruction of the aging pavement are part of the Pippin Road Project. Funding sources include: the Hamilton

County Engineers Road and Bridge fund, federal grants through the OKI Regional Council of Governments, State Capital Improvement Grant money from the Ohio Public Works Commission and some County funds. (Jennie Key. jkey@communitypress.com “Pippin Road in Colerain Twp in midst of massive \$12.5 million overhaul” The Enquirer February 3, 2017)

The gas tax had been a primary source of funding Ohio roads and bridges but has been declining. Since 1993 the federal gas tax of 18.4-cents per gallon has remained unchanged and the Ohio gas tax of 28-cents per gallon has been in place since 2005. Construction costs have increased, more fuel efficient vehicles have reduced gas revenue and some inflation has resulted in less buying power for infrastructure from the gas tax. Ideas for alternative funding include: indexing the gas tax to inflation, creating a Vehicle Miles Traveled (VMT) tax, increasing license plate and registration fees and developing more Public-Private Partnerships for construction.

Federal and state funds for roads are channeled through the Greater Cincinnati Area Metropolitan Planning Organization’s (MPO) Ohio-Kentucky-Indiana Regional Council of Governments (OKI). For transportation projects local governments apply for funds many of which are competitive and require a local match. OKI uses criteria for ranking requests and allocating the limited available funds. Multi-modal and system efficiency improvements guide decisions. The Cincinnati Area LWV has a representative on the OKI Intermodal Coordinating Committee.

SORTA (Southwest Ohio Regional Transportation Authority) provides Metro bus service to the City of Cincinnati and parts of Hamilton and surrounding counties. It is funded uniquely and primarily by the City earnings tax (3/10s of 1 percent of the City 2.1% earnings tax), in addition to fares and some federal funds. A budget deficit is projected in the near term if service remains the same. Buses are a large part of the Metro infrastructure. Metro can purchase a new bus with about 80% federal funding and some local match to replace a bus that is at least 12 years old. A conventional diesel bus costs about \$387,000 and a hybrid costs about \$628,000 and saves about 30% in fuel use over its 12-year useful life. Hybrids powered by an electric motor and a diesel engine, use less fuel and emit less exhaust. Recent new hybrids were funded by a combination of federal funding, including Congestion Mitigation/Air Quality (CMAQ) and Clean Fuels funding and with a local dollar match. A Metro Futures Task Force has recommended permanent public funding. The SORTA Board will decide in the coming months whether to present to voters a new way to fund Metro.

“Fix it First” Policies

The age of the systems, population growth, suburban sprawl, current technology are among factors that impact the need to renovate or replace infrastructure. Aging systems need investment, while there is pressure to invest in expanded sewers and roadways to serve new suburban developments. It can be easier and more politically expedient to build new roads and highway exchanges and expand sewer lines than to update aging infrastructure. Urban communities, first-ring suburbs and smart growth advocates have joined together to promote “fix it first” policies to compete for the limited government funding.

It is more attractive to build new than to update aging infrastructure. Funding is a primary factor.

Appendix

Federal Statutes concerning water quality are administered by US EPA (Environmental Protection Agency):

The Clean Water Act passed in 1972 is a pollution control program that makes it illegal to discharge any pollutant from sources such as pipes or ditches into waterways without a permit.

The Safe Drinking Water Act passed in 1974 sets legally enforceable standards for public water systems. The standards establish acceptable levels of certain contaminants.

References:

American Society of Civil Engineers Report Card:

<http://www.infrastructurereportcard.org/solutions/investment/>

Greater Cincinnati Water Works: <http://www.cincinnati-oh.gov/water/>

Greater Ohio Policy Center: www.greaterohio.org

Metropolitan Sewer District: <http://www.msdc.org/>

Ohio-Kentucky-Indiana Regional Council of Governments: www.oki.org