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failures in the country. The latest county-run broadband failure, in Lake County, was recently profiled by Star Tribune columnist Lee Schafer ("For sale: One rural broadband system," June 30).

Schafer's conversation with the Lake County administrator outlined some of the spin with which local officials are explaining what caused the massive failure of this broadband experiment. As someone who has followed this project since its inception and who will soon be releasing a report on the lessons learned from Lake County, I believe there were a few glaring omissions about this boondoggle that politicians arrogantly ignore.

The Lake County broadband experiment began amid sky-high hopes in the early days of the Obama administration. President Barack Obama, in an effort to inject cash into America's struggling economy,

There is probably no better poster child for government waste — which the Freedom Foundation of Minnesota focuses on eliminating — than municipal broadband. Many Minnesota communities have regrettably been at the forefront of some of the most prolific broadband

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announced a massive federal stimulus package. It became law in February 2009 and included an appropriation of \$7.2 billion “to increase broadband access and usage in unserved and underserved areas of the Nation.” These funds ultimately were administered by the U.S. Department of Agriculture’s Rural Utilities Service (RUS) Broadband Initiatives Program. Later that year, Lake County authorities submitted paperwork to the RUS that included applications for \$33 million in broadband grants and loans. This application was rejected.

It is important to know that at that time, many Lake County residents had access to broadband via three private providers. When confronted with these facts, county officials told the federal government in their application that they felt that those incumbent broadband providers were not entering sparsely populated areas quickly enough and that they charged too much for high-speed internet service. They mistakenly believed they could do better.

After the initial rejection, Lake County politicians doubled down on their federal grant and loan application, adding parts of neighboring St. Louis County to their new RUS application and increasing the estimated cost from \$40 million to \$66 million. In late 2010, Agriculture Department officials announced 43 new broadband infrastructure loans and grants to communities, including Lake County — one of the largest taxpayer-funded projects in the country.

Throughout this process, county officials made promises to local residents that were not kept. Starting as early as June 2009, Lake County officials involved in the broadband project gave multiple assurances to county residents that “taxpayers will not be responsible for any debt.” By that time, the County Board had authorized \$15 million in local tax dollars — which represents \$1,400 for every man, woman and child in Lake County. This massive infusion of local cash was deemed necessary after the RUS briefly froze federal funding for the project in 2014. Worried that the project wasn’t living up to its ambitious projections, the RUS released additional project funding only after congressional intervention.

Currently, Lake County taxpayer funding for the project totals \$17 million. There are many other twists and turns in this project, including a glaring lack of subscribers even as the system is nearly complete. At its current rate of subscribers, the project cannot become financially viable, nor can it begin to achieve the promised expectation of 7,500 subscribers (as of April 2017, there were 2,462). And now this enormously expensive network is on the auction block and likely will be sold for pennies on the dollar, leaving taxpayers responsible for this irresponsible experiment.

There are a multitude of lessons to be learned from Lake County, but none as important as the simple facts that we’ve learned from Monticello, Moorhead and numerous other communities around the country: Providing ultra-high-speed broadband service in large, rural areas is complicated, costly and ultimately highly competitive. Market-based forces will always come into play when municipalities decide to compete against private telecom providers. But most important, it’s not something that local governments should be doing.

The lessons of Lake County will continue to be written in the coming weeks and months as local elected officials, in consultation with the RUS and other Minnesota politicians, decide the broadband project’s fate. I hope that the tone of the conversation going forward from Lake County officials is one of regret and concern for the vast amounts of taxpayer dollars that have been wasted on this costly experiment. But most important, I hope politicians across the state heed the lessons learned the hard way. – *Minneapolis Star Tribune*

Lawmakers in 179 California cities including San Jose, Oakland and San Francisco are fighting a bill to streamline permitting for wireless antennas on public buildings, streetlamps and traffic signal poles that they say would limit local control over where they go.

Senate Bill 649, by Sen. Ben Hueso, D-San Diego, proposes scaling back permit processes for antennas and equipment in an effort to meet demand for wireless services. It would cap how much a local government could charge phone companies for leases to \$250 per year, though it does not prohibit them from “mutually agreeing” to a charge that’s different.

Supporters say the proposed law could lower cell phone bills for customers, increase wireless access, allow the state to deploy 5G networks and help California remain a leader in the wireless industry. But the cities and counties opposing the bill say it would be a financial giveaway to telecom companies at the expense of taxpayers. Local officials, they say, would no longer approve the permits in a public hearing, and would lose their power to negotiate public benefits, such as network access for police, fire and parks. “Our citizens should be concerned because they will no longer have any say-so over these things,” said San Jose Councilman Johnny Khamis. “It takes away the control of where we can place them, the aesthetic qualities and how much revenues we can charge for use of public space.”

Under the bill, phone companies like Verizon or AT&T could install antennas as large as 6 cubic feet and equipment boxes as large as 35 cubic feet — about the size of a refrigerator — sparking concerns about visual blight from the bulky equipment. SB 649 is primarily supported by the Cellular Telecommunications and Internet Association which said it will help boost the economy. Locally, it's supported by the Silicon Valley Leadership Group, the Oakland Metropolitan Chamber of Commerce and the East Bay Leadership Council.

Jamie Hastings, CTIA's senior vice president of external and state affairs, said the bill maintains local authority for "small cell" antennas, particularly in historical or coastal areas. She also said governments can recover capital and administrative costs. "In addition, the bill provides the regulatory certainty necessary for the wireless industry to invest \$275 billion on the infrastructure critical to deploying 5G networks," Hastings said.

The bill is opposed by California State Association of Counties, League of California Cities and Rural County Representatives of California. "We don't want refrigerators on poles outside of people's windows," said Rony Berdugo, a legislative representative for the League of California Cities. "Despite promises being made by the wireless industry, this bill does nothing to guarantee the technology meets 5G, that it gets deployed to underserved areas and that whatever cost-savings they see from this bill is passed on to their customers."

San Jose Mayor Sam Liccardo, who went to the state Capitol last week to testify against the bill, said it forces the city to give wireless corporations access to public property without input about the equipment's location or size. The bill also doesn't allow San Jose to charge fair rates for leases, he added, and provides no guarantee that low-income areas will get better wireless connectivity.

Despite opposition from Liccardo and the mayors of Oakland, San Francisco, Los Angeles, Santa Ana and Long Beach, the bill passed the state Senate earlier this year and the Assembly's Local Government Committee on a 6-2 vote last week. Bay Area lawmakers Jim Beall (D-San Jose), Bob Wieckowski (D-Fremont) did not vote on the bill when it came to the Senate floor in May. Senator Jerry Hill (D-San Mateo) voted in favor of it. "We all expected that the committee would move the bill forward — as is customary for a powerful lobby like telecom — but by the time that this gets to the Assembly floor, we'll hear considerably from the more than 150 California cities that have joined San Jose in opposing this massive taxpayer subsidy of a half-trillion dollar industry," Liccardo said.

CALinnovates, a San Francisco coalition of tech companies, said consumer demand for faster broadband is growing, and Hueso's bill could help meet the demand. "While increased connectivity will certainly allow more people to simultaneously stream over the top entertainment like Orange Is The New Black, small cells can also provide a cost-efficient method of increasing broadband speeds in rural communities, make public transportation systems more responsive and strengthen network connectivity during large public gatherings and events," chief evangelist Kish Rajan wrote.

The bill next will be considered by the Assembly Communications and Conveyance Committee on July 12. Supporters are hoping the legislation gets final approval by September. If approved by the Legislature, critics hope Gov. Jerry Brown vetoes the bill. — ***San Jose (CA) Mercury News***

Last year, Apple Inc. kicked off a massive experiment with new privacy technology aimed at solving an increasingly thorny problem: how to build products that understand users without snooping on their activities. Its answer is differential privacy, a term virtually unknown outside of academic circles until a year ago. Today, other companies such as Microsoft Corp. and Uber Technologies Inc. are experimenting with the technology.

The problem differential privacy tries to tackle is that modern data-analysis tools are capable of finding links between large databases. Privacy experts worry these tools could be used to identify people in otherwise anonymous data sets. Two years ago, researchers at the Massachusetts Institute of Technology discovered **shoppers could be identified** by linking social-media accounts to anonymous credit-card records and bits of secondary information, such as the location or timing of purchases. "I don't think people are aware of how easy it is getting to de-anonymize data," said Ishaan Nerurkar, whose startup LeapYear Technologies Inc. sells software for leveraging machine learning while using differential privacy to keep user data anonymous.

Differentially private algorithms blur the data being analyzed by adding a measurable amount of statistical noise. This could be done, for example, by swapping out the answer to one question (have you ever committed a violent crime?) with a question that has a statistically known response rate (were you born in February?). Someone trying to find links in the data would never be sure which question a particular person was asked. That lets researchers analyze sensitive data such as medical records without being able to tie the data back to specific people.

Differential privacy is key to Apple's artificial intelligence efforts, said Abhradeep Guha Thakurta, an assistant professor at University of California, Santa Cruz. Mr. Thakurta worked on Apple's differential-privacy systems until January of this year. Apple has faced criticism for not keeping pace with rivals such as Alphabet Inc.'s Google in developing AI technologies, which have made giant leaps in image and language recognition software that powers virtual assistants and self-driving cars.

While companies such as Google have access to massive volumes of data required to improve artificial intelligence, Apple's privacy policies have been a hindrance, blamed by some for turning the company into a laggard when it comes to **AI-driven products such as Siri**. "Apple has tried to stay away from collecting data from users until now, but to succeed in the AI era they have to collect information about the user," Mr. Thakurta said. Apple began rolling out the differential-privacy software in September, he said. Users must elect to share analytics data with Apple before it is used.

Originally used to understand how customers are using emojis or new slang expressions on the phone, Apple is now expanding its use of differential privacy to cover its collection and analysis of web browsing and health-related data, Katie Skinner, an Apple software engineer, said at the company's annual developer's conference in June.

The company is now receiving millions of pieces of information daily—all protected via this technique—from Macs, iPhones and iPads running the latest operating systems, she said. "Apple believes that great features and privacy go hand in hand," an Apple spokesman said via email. Google, one of differential privacy's earliest adopters, has used it to keep Chrome browser data anonymous. But while the technology is good for some types of analysis, it suffers where precision is required. For example, experts at Google say it doesn't work in so-called A/B tests, in which two versions of a webpage are tested on a small number of users to see which generates the best response. "In some cases you simply can't answer the questions that developers want answers to," said Yonatan Zunger, a privacy engineer at Google. "We basically see differential privacy as a useful tool in the toolbox, but not a silver bullet."

Researchers are coming up with "surprisingly powerful" uses of differential privacy, but the technology is only about a decade old, said Benjamin Pierce, a computer science professor at the University of Pennsylvania. "We're really far from understanding what the limits are," he said. Differential privacy has seen wider adoption since Apple first embraced it. Uber employees, for example, use it to improve services without being overexposed to user data, a spokeswoman said via email.

Microsoft is working with San Diego Gas & Electric Co. on a pilot project to make smart-meter data available to researchers and government agencies for analysis, while making sure "any data set cannot be tied back to our customers," said Chris Vera, head of customer privacy at the utility. The U.S. Census Bureau confronted the problem of links between data sets a decade ago. By 2005, the bureau was worried large databases outside its control could be used to de-anonymize censor participants, said John Abowd, chief scientist at the bureau. After meeting with some of the creators of differential privacy, the bureau became an proponent.

In 2008 the Census released its first product to use this technology—a web-based data-mapping portal called OnTheMap—and the bureau is now "making an intense effort to apply differential privacy to the publication of the 2020 census," Mr. Abowd said. — **Wall Street Journal**

Misrepresentation doesn't get much lower than lying about military service to benefit economically. Pennsylvania's new "Stolen Valor" bill, passed unanimously by the Legislature and signed by Gov. Tom Wolf, will target fraudsters, who will face a third-degree misdemeanor charge for passing themselves off as something they're not. Aside from punishment where punishment is due, the legislation also upholds the honor and respect earned by America's men and women in uniform. — **Pittsburgh Tribune-Review**



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