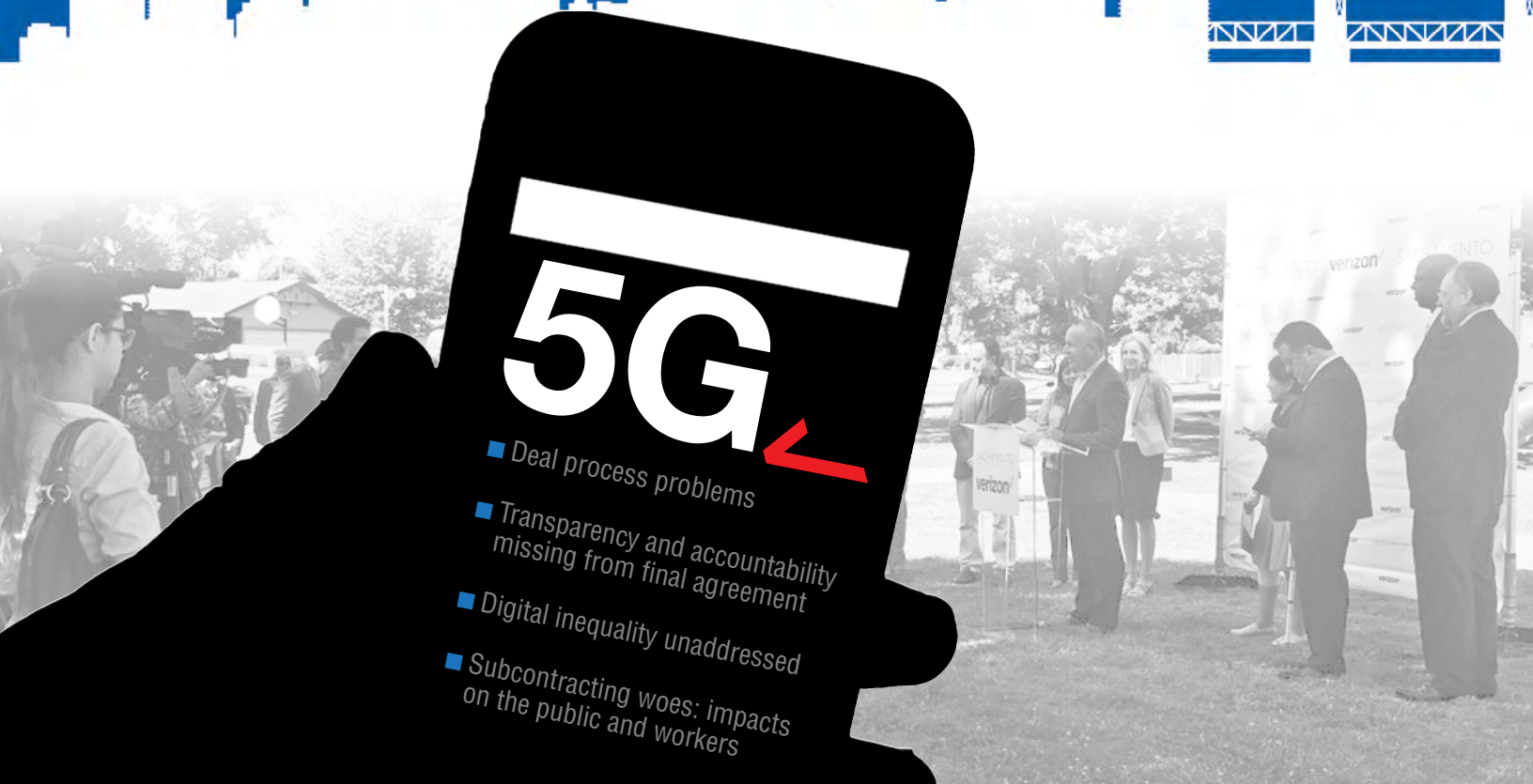
Verizon's 5G Promise Rings Hollow in Sacramento:

Analysis of public-private partnership reveals lack of transparency, accountability, and equity



Executive Summary

The public-private partnership between the City of Sacramento and Verizon Communications promised to make Sacramento one of the nation's first "5G cities." Yet the deal has failed to deliver promised benefits, and residents may wonder whether this partnership is a corporate giveaway.

The agreement with Verizon lacked transparency in passage and accountability in the provision of community benefits. In the past two years, Verizon has seriously delayed or completely dropped key benefits.

Under the agreement, Verizon is not required to build its network to all parts of Sacramento, leaving the city's substantial digital divide unaddressed. Further, the promised 5G network reaches only a tiny portion of city households and may wither on the vine as analysts question the financial viability of Verizon's 5G home Internet service.

The agreement with Verizon also fails to address employment standards and hiring practices for workers building and maintaining the network. In 2018, Verizon employed at least ten subcontractors, most from outside California, some with highly questionable employment track records. These subcontractors have been responsible for a large number of utility disruptions across the city, costing taxpayers tens of thousands of dollars.

This report provides an overview of the problems with the Verizon-Sacramento partnership and points the way forward with recommendations to improve accountability and strengthen community benefits.

Table of Contents

- Background: 5G Promises Unfulfilled 1
- Deal Process Problems 2
- Transparency and Accountability Missing from Final Agreement 5
- Digital Inequality Unaddressed 6
- Subcontracting Woes: Impacts on the Public and Workers 7
- Recommendations 9

Background: 5G Promises Unfulfilled

On June 6, 2017, the Sacramento City Council voted unanimously to approve a $100 million no-bid public-private partnership with Verizon Communications to support the company's 5G next generation wireless network.[1] Verizon made the 5G Home network available to parts of some Sacramento zip codes in October 2018.[2]

Verizon described the agreement as one that "not only underscores the city's commitment to putting its citizens first, but to providing them with the tools, engagement opportunities and innovation to drive digital equality and quality-of-life improvements."[3]

Several of the community benefits have been delayed or cancelled and others have very short terms. Meanwhile, Verizon gained access to underground city infrastructure free-of-charge for 20 years.

Verizon received valuable access to city infrastructure and a streamlined process to deploy its 5G home product in California's capitol, a public relations coup that netted wide media coverage.[4]

Contrary to this positive public image of the partnership, the reality of the Verizon deal — from the proposal stage through implementation — has failed to benefit Sacramento residents.

The shortfalls of the agreement begin with the process through which the public-private partnership was negotiated, including a lack of public notice or input and passage of a final agreement that favored Verizon's proposed terms and omitted key information.

Congresswoman Doris Matsui, Mayor Darrell Steinberg, Innovation Chief Louis Stewart and local business leaders attended the press conference at Cabrillo Park on June 6, 2017 to announce the Verizon partnership.

The agreement also lacks reporting or accountability mechanisms, leaving the city with little recourse to ensure the public receives the promised benefits. Several of the community benefits have been delayed or cancelled and others have very short terms. Meanwhile, Verizon gained access to underground city infrastructure free-of-charge for 20 years.

Even as Verizon touts "digital equality" as a goal of the partnership, the company made no commitment to build out its network to Sacramento communities in an equitable manner. Nor did the company make other meaningful commitments to address the digital divide in Sacramento, a serious omission considering that more than 20% of Sacramento households lacked home internet in 2017.[5] Sacramento ranked 112 out of 186 by the percent of households with a home broadband subscription among US cities with more than 50,000 households, according to the National Digital Inclusion Alliance.[6]

Nor did the company make other meaningful commitments to address the digital divide in Sacramento, a serious omission considering that more than 20% of Sacramento households lacked home internet in 2017.

The agreement is also silent on employment standards, hiring practices, and respect for the rights of workers building and maintaining the network, and it lacks oversight to ensure quality work. Verizon is relying on a web of non-union subcontractors, many of which are from outside California. These subcontractors have caused a significant number of utility disruptions and damage to city property when they hit underground utility lines.

Beyond the concerns about fairness in this public-private partnership, analysts have raised questions about the viability of Verizon's 5G Home wireless internet product because the small cell technology required to beam into residents' homes requires a direct line of sight and often cannot, for example, reach through trees and buildings, and requires a massive number of cell sites to effectively cover the city.

"To us, the most interesting statistic isn't so much the low take rate [in Sacramento] as it is the relatively low coverage."

Moffet Nathanson, "Peek Behind the Curtain of Verizon's 5G Rollout"

As of March 2019, Verizon's coverage only reaches 6% of residents in tested areas of Sacramento, according to telecom equity analysts at Moffett Nathanson, and within that coverage area only 3% of households had subscribed.[7] Another wireless technology expert questioned the feasibility of deploying comprehensive 5G coverage in neighborhoods that have decorative street lights, such as Village 7 in Sacramento, because these short poles would likely need to be replaced to support the cell sites — a task that may be too large for any wireless carrier.[8] Verizon itself provides no coverage maps for 5G Home.[9]

Analysts with Moffett Nathanson wrote in their report on Verizon's Sacramento 5G deployment, "To us, the most interesting statistic isn't so much the low take rate as it is the relatively low coverage, as it illustrates the enormity of the challenge of scaling a small cell network, in neighborhood after neighborhood, across the United States."[10] They point to the smaller than expected radius of coverage for each small cell site as a major hurdle. Since the Sacramento roll-out, Verizon has paused its 5G Home internet product deployment plans, which the company had previously claimed could reach 30 million homes.[11]

Verizon has made it clear that the Sacramento deal is a model for the type of public-private partnership it is pursuing with other cities.[12] Sacramento residents and other cities approached by the company should be aware of the risks and pitfalls that come with deals that are rushed through without public input and lack mechanisms for accountability and transparency.

Deal Process Problems: Approval of Public-Private Partnership was Rushed and Lacked Community Input

The process by which the partnership with Verizon was approved raises serious concerns about transparency and accountability and should prompt questions about the city's approach to private sector partnerships. The agreement was rushed, likely driven by motivation for Sacramento to become the "first 5G city," with Verizon proposing passage within "60-90 days" of the first proposal that was presented to the city in January 2017,[13] and both parties agreeing to a "high level aggressive timeline moving forward" in early February.[14] The following are issues of concern regarding the deal process:

WAIVER OF REQUIRED 10-DAY PUBLIC NOTICE

The Sacramento City Council bypassed the requirement for notifying the public about the proposal 10 days before voting to approve it in June 2017.[15] Verizon first proposed the partnership in January of that year, which should have provided time to make the public aware of the negotiations and pending agreement, and allow for an input process to ensure a fair deal.[16]

UNANIMOUS PASSAGE OF INCOMPLETE AGREEMENT

Several crucial components of the agreement were incomplete at the time the Council voted unanimously to approve it, which in turn hampered transparency and accountability in the process. These components included:

Statement of Work

The Council approved the deal without completion of a Statement of Work detailing the actual costs to the city and the description of the work to be completed.[17]

Monitoring and Evaluation Metrics

The Council approved the deal without establishing required metrics that would have provided a basic level of accountability for the city to track progress of the network buildout.[18] These metrics still have not been established, and the city has said Verizon does not provide updates on the progress of network deployment and accessibility.

A Verizon small cell site in Sacramento.
Source: EJL Wireless Research LLC.

Wireline Deployment Agreement with Fiber Provision Terms

In May of 2018, the city emailed Verizon on two occasions, notifying the company that it had failed to provide "several key pieces of information" including the "value/investment dollars"[19] and "key fiber terms."[20] Despite not having this information, the Council passed the agreement unanimously. The value/investment information was never included, and the fiber terms were completed two weeks after the agreement was signed.[21]

FAILURE TO ADDRESS SPECIFIC NEEDS OF UNDERSERVED COMMUNITIES

When Verizon approached the city, staff recommended that the public-private partnership address specific digital needs in order to serve under-connected neighborhoods. For example, an official in the Sacramento Economic Development Department made the following recommendations, which went unanswered:

> *…[I]n negotiations w/ VZW please [discuss] the digital equity opportunities associated with the two primary public housing communities managed by Sacramento Housing and Redevelopment Agency (SHRA)… Marina Vista/Alder Grove, a 750 + unit community and Vallejo…The ask would be a community wide wifi network, 1 computer/household, especially for households with school-aged children, and funding for digital literacy training…The other public housing community would be Twin Rivers [a HUD Choice Neighborhoods Community]…Support [would be] for development of a community wifi network and digital literacy training.*[22]

Staff also cited Del Paso Heights as a priority community.[23] In the end, the agreement did not include any resources for public housing communities.

DUPLICATION OF EXISTING CONTRACTUAL AGREEMENT LED TO LITIGATION

The city signed an agreement with 5 Bars, LLC in 2015 allowing 5 Bars (now called XG[24]) to market and manage city assets for small cell deployment.[25] The city was made aware of potential conflicts between the 5 Bars contract and the proposed Verizon deal on multiple occasions, but chose to approve the Verizon deal despite the possible legal ramifications.[26] 5 Bars sued the city and on October 25, 2018, a Superior Court judge found in favor of 5 Bars and ruled against the city's interpretation of the agreement. The case is currently on appeal, and potential for further litigation hangs over the city's actions going forward.[27]

NEGOTIATIONS FAVORED VERIZON'S PROPOSED TERMS

Verizon provided an initial draft term sheet laying out the company's proposed scale and timeline of benefits.[28] Some city staff made concrete suggestions to strengthen the community benefits and the city attempted to negotiate better terms, but Verizon countered with reduced benefit timelines and smaller scale benefits.[29] The city accepted the countered terms that favored Verizon's interests over more robust community benefits.[30] See Figure 1.

Figure 1.

Verizon proposed benefits to the city[31]	City of Sacramento response to Verizon's proposed benefits to the city	Final[32]
Public Wi-Fi spanning 10 sq miles	Public Wi-Fi spanning 5 sq miles downtown, all city parks, and in the 'innovation area' south of Cal State[33] Term: 10 years[34]	Public Wi-Fi in 27 city parks Term: 5 years
Vision Zero and Smart traffic solutions at 15 intersections	Term: 5 years[35]	Term: 2 years
Intelligent video solutions at 10 intersections	Term: 5 years[36]	Term: 2 years
Provide ThingSpace platform to collect and analyze city data	Term: 5 years[37]	Term: 2 years
Sponsor 5 internships per year for 3 years	Sponsor 15 internships per year for the duration of P3 [5 years][38]	Sponsor minimum of 5, maximum of 20 high school interns per year for 5 years
Conduct a workshop to get middle and high school students excited about STEM	Fund or conduct a minimum of one workshop per year for the duration of the P3 to get elementary, middle, and high school students from priority neighborhoods excited about STEM[39]	Verizon will fund or conduct a minimum of one workshop per year for 5 years to get elementary, middle, and high school students from priority neighborhoods excited about STEM
Cancelled community benefit, without replacement: Kiosks		
15 Kiosks	15 Kiosks Term: 10 years[40]	15 Kiosks Term: 5 years; after 2 years, the City may continue with 5 year term, or may extend to a total of 10 years
Kiosk advertising revenue — "post cost recovery, Verizon will begin sharing advertising revenue with the City"	After 2 years of cost recovery, Verizon will share 40% of advertising revenue with the City[41]	If the City opts to extend to the ten year term option, Verizon will share 20% of the advertising revenue

Transparency and Accountability Missing from Final Agreement

The Verizon agreement was approved with no mechanisms to monitor and track the progress of the network buildout and the roll-out of community benefits, and included no provision to allow for community input and feedback.

FAILURE TO ESTABLISH MONITORING AND EVALUATION METRICS FOR NETWORK BUILDOUT

The city and Verizon did not establish metrics to monitor and evaluate the roll-out of the 5G Home network, which was launched in a very limited set of areas in October 2018.[42] The agreement between Sacramento and Verizon does not address the timeline and scope of the network build-out.

FAILURE TO ESTABLISH TIMELINES FOR COMMUNITY BENEFITS ROLL-OUT

Though Verizon committed to providing several community benefits as part of the deal, the company has not implemented any of the major benefits to date. For example, Verizon committed to providing Wi-Fi in 27 public parks.[43] As of April 2019, no parks have been connected to Wi-Fi, despite Verizon's launch of the 5G Home network in October 2018.[44]

Verizon also promised to provide 15 digital kiosks that were intended to promote pedestrian engagement, offer free Wi-Fi and generate ad revenue to support other aspects of the partnership. However, in November of 2018, the plans to install the kiosks, originally described as a "key deal point," were scrapped, with no proposed community benefit to replace them.[45]

Verizon committed to providing Wi-Fi in 27 public parks. As of April 2019, no parks have been connected to Wi-Fi, despite Verizon's launch of the 5G Home network in October 2018.

Further, the benefits Verizon is providing the city have short timeframes, spanning two to five years. It is unclear whether the city will have to pay for those services after the contract terms expire, and what the financial terms would be at that point. In contrast, Verizon was given 20 years of free access to city-owned conduit[46] and a streamlined permitting process for ten years.[47]

QUESTIONS ABOUT COMPLIANCE WITH DEMONSTRATION PARTNERSHIPS POLICY

The City Council adopted a new policy governing public-private partnerships in the midst of negotiations with Verizon, laying out principles to maximize public benefit and engage the public in innovative partnership opportunities.[48] There may be aspects of the Verizon agreement that are not in accordance with this Demonstration Partnerships Policy (DPP). For example, two minimum partnership criteria are, "Identify stakeholder and user groups that will be impacted by the effort and establish an engagement process or feedback measures for those groups," and "Include a monitoring and implementation plan…and include key project metrics in an accessible format."[49] Neither the city nor Verizon consulted community stakeholder and user groups, and no engagement or feedback process was established. Further, the agreement did not include a monitoring and implementation plan, and no key project metrics were established.

Digital Inequality Unaddressed: Network Distribution and Public Benefits Do Not Prioritize Equity

Verizon did not agree to any meaningful steps to promote digital equity in the build-out of its network and provision of digital tools.

DISTRIBUTION OF SMALL CELLS AND FIBER CONCENTRATED IN COMMERCIAL AND HIGHER/ MIDDLE-INCOME NEIGHBORHOODS

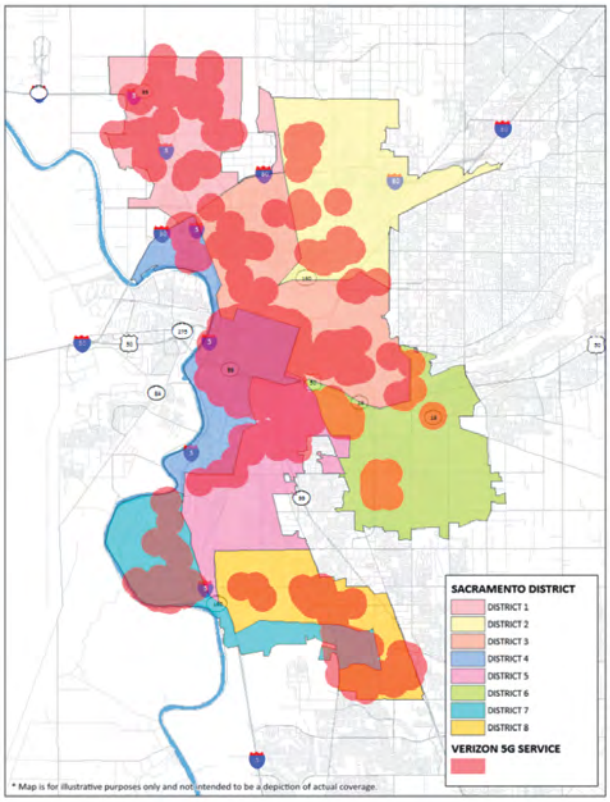
The company's network construction concentrates small cells and fiber in the downtown area, with much less investment in other parts of the city, particularly underserved areas. There was little effort to address connectivity in the northeast, where some of the lowest income Sacramento residents live.[50]

SPARSE AVAILABILITY OF 5G HOME NETWORK

Verizon made fixed 5G service available to parts of some zip codes on October 1, 2018. Recent expert analyses estimated the initial deployment covered only 6% of tested areas.[51] Local news station CBS13 also documented the limited availability of the 5G home product in an article titled "Did Verizon Jump the Gun on 5G in Sacramento?"[52] City staff have said they expect Verizon to deploy mobile 5G "pretty soon" in the city, but Verizon has not included Sacramento as one of its current list of cities that will see mobile 5G service in 2019.[53]

SELECTION OF PARKS FOR WI-FI

Based on a review of correspondence between Verizon and the city, the locations for Wi-Fi placement in 27 city parks appear to have been influenced by the desire to secure City Council support, rather than by efforts to reduce the digital divide. A Verizon official asked, "Were you able to reduce the park coverage to approximately 3 parks per [city council] district…I want to quickly cost this to allow us to get it into the PPP."[54] The selected parks are not located in close proximity to the under-connected neighborhoods cited by city staff, and there was no correspondence identifying community need as a factor in designating Wi-Fi locations.



A map of Verizon's planned deployment areas for its 5G Home product in Sacramento. Expert analysis suggests actual coverage is much more limited. Source: https://www.cityofsacramento.org/Smart-City/5G

LIMITED USE OF DARK FIBER

Verizon is providing access to some fiber to the city for public purposes, but placed severe restrictions on how the city may use the fiber. Based on the written agreement, the city may use the fiber to support Verizon's own Internet of Things technology.[55] While access to fiber can be a valuable public asset used to connect and monitor city services, such as traffic and public safety, it remains unclear how much value the city can get from the limited uses Verizon has allowed.

Subcontracting Woes: Out-of-State Subcontractors Damage Sacramento Infrastructure and Lack Accountability

Verizon has a track record of hiring irresponsible subcontractors to build its wireless network across the United States. In some cases, these subcontractors have caused serious accidents, such as a 2018 incident in which an employee of subcontractor VC Tech hit a gas main in Sun Prairie, Wisconsin causing an explosion that leveled half a city block, killing a volunteer firefighter and critically injuring another.[56] At the time of the blast, VC Tech was delinquent in its registrations to work in the state, raising serious questions about Verizon's oversight and vetting of its contractors.[57] Another unlicensed subcontractor from New Jersey working in San Francisco caused an explosion in February 2019.[58] Despite these past cases, Verizon has taken the same approach to network construction in Sacramento.

VERIZON SUBCONTRACTORS CAUSE UTILITY OUTAGES AND COST TAXPAYERS

In order to install the equipment to deploy Verizon's network, workers must dig under sidewalks and roads to access underground conduit in which to lay fiber. Verizon has employed at least ten contractor companies, many of which are from outside California, to carry out this work. These contractors are reportedly paid on a piece rate, which can cause workers to rush through jobs and increase the risk of accidents.

During the construction process, Verizon's contractors have caused numerous underground utility hits and utility service disruptions that impact households and businesses. These disruptions cost the city tens of thousands of dollars and hundreds of employee hours to remedy. Over a period of just seven months, between May 2018 and January 2019, Verizon contractors caused 41 hits that were reported to the city.[59] While the city could not provide complete information on costs, an examination of just three incidents where Verizon contractors damaged underground water lines shows a combined cost of more than $54,400 relating to damage to water and sewer pipes, and required more than 208 employee hours.[60]

SUBCONTRACTORS' TRACK RECORDS RAISE QUESTIONS ABOUT ACCOUNTABILITY AND SAFETY

Verizon employed at least ten subcontracting companies to build the 5G network in Sacramento during the period for which records are available. Seven of the contractor companies are based outside California, coming from Arizona (2), Florida, Missouri, Pennsylvania, Texas, and Washington State. In addition to causing substantial damage to Sacramento utilities, some also have records of health and safety violations and employee mistreatment.

- Golden State Utility, headquartered in Washington State,[61] is the lead contractor for Verizon and was responsible for the highest number of utility disruptions in Sacramento, with 26 hits.[62] Golden State has a record of OSHA violations. OSHA cited the company for failing to maintain an effective Injury and Illness Prevention Program in 2015, cited the company for multiple violations in 2010, and in 2009, issued an initial penalty of $79,630 for five "serious" violations, including conditions where a worker installing telecommunications line was fatally electrocuted.[63]

Over a period of just seven months, between May 2018 and January 2019, Verizon contractors caused 41 utility hits that were reported to the City.

- Republic Telecom, headquartered in Texas,[64] produced the highest costs to the city of $22,932.57, including 110 employee hours, related to two incidents that occurred in less than one month.[65] Inspectors said of the first incident, "It is not possible that the contractor physically verified the water main as required. The contractor is at fault for all the damages the city of Sacramento utility department incurred because of contractor negligence."[66] A similar report on Republic's actions accompanied the second incident report.[67] Further, Republic was fined nearly $11,000 by OSHA for three "serious" violations in St. Louis, Missouri in May of 2018, around the same time it was working in Sacramento. The violations were in relation to trenching safety, the same work it was performing in Sacramento.[68]

■ Smart Communications, headquartered in Florida,[69] was responsible for an incident that caused over $26,000 in damage and required almost 100 employee hours to remedy.[70] An inspector said of the incident, "The contractor is negligent because they failed to maintain adequate depth and clearance to avoid damaging city water main that was clearly located and marked as requested by Utility Service Alert 811. The contractor worked outside of the legal proposed excavation, as well, which resulted in water main damage."[71] The Department of Labor's Wage and Hour Division found smart communications committed wage theft violations in 2013, and the company paid back wages of $3,945.[72]

■ Kleven Construction, headquartered in Arizona,[73] was responsible for six utility hits in less than four months during the Sacramento build.[74] The company was sued by an employee alleging Kleven forced them to work off-the-clock and did not pay overtime.[75]

■ ABD Utility Contractors, headquartered in Missouri,[76] was responsible for two utility hits over two months.[77] OSHA cited the company for three "serious" violations related to trenching safety in 2015.[78]

■ United Building Contractors, headquartered in Chico, California[79] was fined nearly $3,000 by OSHA in July 2017 for violations relating to health and safety compliance and heat illness prevention related to work carried out in Sacramento,[80] and was fined another $9,959 in March 2018 for violations relating to work carried out in Florida.[81]

Given the risks associated with using a collection of out-of-state subcontractors for such a massive construction project, Verizon should have prioritized hiring a local workforce and avoiding subcontractors with poor employment records.

Recommendations

In order to ensure accountability and transparency, promote digital equity, and ensure respect for workers' rights, we recommend Verizon and the City of Sacramento take the following actions:

NETWORK DISTRIBUTION AND DIGITAL EQUITY

Work with community stakeholders to revise the partnership deal to promote digital equity and provide community benefits commensurate to the financial benefit Verizon is receiving as a result of being given reduced cost access to the public right-of-way and city assets.

- These revisions should involve revising the network build-out plans to require coverage of underserved areas, as well as the inclusion of community benefits targeted to address the needs of under-connected neighborhoods.

Pass a Master License Agreement (MLA) structure that creates a level playing field for wireless carriers and promotes equitable network buildout moving forward.

- A master license agreement structure can include components such as a tiered pricing structure for deployment of wireless network infrastructure in underserved communities, as was adopted in New York City.[82] It can also include contributions to a designated Digital Inclusion Fund, the purpose of which would be to pay for programs aimed at effectively reducing the digital divide. This fund could be modeled after an MLA structure pioneered by the City of San Jose.[83]

PUBLIC ACCOUNTABILITY AND TRANSPARENCY

Work with community stakeholders to establish a public reporting system to track network buildout and deployment of community benefits.

- The public reporting system should include clear benchmarks to ensure the network and promised community benefits reach all neighborhoods in a timely manner.

- This system should also include a clawback provision to serve as an accountability mechanism if Verizon fails to uphold its end of the deal.

SUBCONTRACTING

Include provisions to ensure subcontractor transparency.

- For each installation, require Verizon to provide the city with a statement of what entity will be performing work in the right-of-way, whether Verizon, its subcontractors, or an entity contracted by its subcontractors. Public accountability requires basic transparency about who is doing the work in the public right-of-way.

- Require that Verizon and its subcontractors comply with federal, state, and local labor laws and regulations, including Occupational Safety and Health Administration regulations, the National Labor Relations Act, and the Fair Labor Standards Act.

- Require that Verizon and its subcontractors carry legally required workers' compensation insurance and sufficient private insurance to ensure that the public and workers can hold the companies accountable should an accident occur in the right-of-way.

- Require companies working in the right-of-way to rely less on non-local, subcontracted workers, and instead support Sacramento's local workforce to ensure major partnerships such as this benefit Sacramento workers. Sacramento already sets local hire goals in large city projects.[84] An MLA should similarly encourage the participation of local business enterprise and stimulate the local economy. If training is required to increase the local, qualified workforce, Verizon should fund local applicants with relevant work experience to attain necessary certifications.

Notes

[1] Lillis, R. "Free Wi-Fi planned in many Sacramento parks as City Council approves Verizon deal," *Sacramento Bee*, June 6, 2017. http://www.sacbee.com/news/local/news-columns-blogs/city-beat/article154728374.html.

[2] McGough, M. "Verizon 5G service starts Monday. Here's what it means for Sacramento, and the internet," *Sacramento Bee*, October 1, 2018. https://www.sacbee.com/news/local/article219177475.html.

[3] City of Sacramento, Press Release, "City of Sacramento Announces Plan for a Smarter, Safer, and More Connected City in Partnership with Verizon," June 7, 2017. https://web.archive.org/web/20170611151840/https://www.cityofsacramento.org/City-Manager/Media-Releases/City-and-Verizon-Team-up-to-Advance-Sacramento-as-a-Tech-City.

[4] See, e.g., Patton, V. "Mayor Steinberg, Verizon announce $100 million agreement to foster 'tech forward' future." *Sacramento Business Journal*, June 1, 2017. https://www.bizjournals.com/sacramento/news/2017/06/01/mayor-steinberg-verizon-announce-100-million.html.

Snow, J. "Sacramento, CA approves $100M deal with Verizon for tech infrastructure," *Smart Cities Dive*, June 14, 2017. https://www.smartcitiesdive.com/news/sacramento-ca-approves-100m-deal-with-verizon-for-tech-infrastructure/444791/.

[5] Statistical Atlas.com Calculation: (23,000 households with only cellular data + 16,100 households with no internet access) / 189,193 total households = 20.67%.

[6] Siefer, A. "Worst Connected Cities, 2016," National Digital Inclusion Alliance, June 7, 2018. https://www.digitalinclusion.org/blog/2018/06/07/worst-connected-cities-2016/.

[7] Horwitz, J. "Report: Verizon 5G Home service too expensive to scale, attracts few users," *Venture Beat*, March 22, 2019. https://venturebeat.com/2019/03/22/report-verizon-5g-home-service-too-expensive-to-scale-attracts-few-users/.

Moffet Nathanson. "Peek Behind the Curtain of Verizon's 5G Rollout." March 20, 2019.

[8] Lum, E. "United States 5G Fixed Wireless Access Case Study, Verizon Wireless & City of Sacramento," January 2019, page 34.

[9] Verizon Communications, "Verizon 5G Home FAQs," accessed June 3, 2019. https://www.verizonwireless.com/support/5g-home-faqs/.

[10] Op. cit., note 9.

[11] Vestberg, H. Verizon 4Q 2018 Quarter Earnings Call, January 29, 2019. https://www.verizon.com/about/investors/quarterly-reports/4q-2018-quarter-earnings-conference-call-webcast.

Horwitz, J. "Verizon: 5G Home won't expand until second half of 2019," *Venture Beat*, January 29, 2019. https://venturebeat.com/2019/01/29/verizon-5g-home-wont-expand-until-second-half-of-2019/.

Jones, D. "Verizon CFO Reiterates Plans to Pass 30 Million Homes With 5G," *Light Reading*, November 14, 2018. https://www.lightreading.com/mobile/5g/verizon-cfo-reiterates-plans-to-pass-30-million-homes-with-5g/d/d-id/747597.

[12] Silbey, M. "Verizon Takes 'One Fiber' to More Cities," Light Reading, June 22, 2017 https://www.lightreading.com/smart-cities/verizon-takes-one-fiber-to-more-cities/d/d-id/733901.

Riley, H. Verizon Enterprise, Insights Lab, "The importance of public-private partnerships to make smart cities a reality," April 23, 2018. http://www.verizonenterprise.com/verizon-insights-lab/VES/the-importance-of-public-private-partnerships-to-make-smart-cities-a-reality.

[13] Sacramento Verizon MOU Final. Presented to City of Sacramento January 10, 2017.

[14] Email from Maria MacGunigal to city staff titled 'Smart Cities PPP Verizon Initiative — update 2/13," sent February 13, 2017. Received via information request June 14, 2018.

[15] Lillis, R. "Free Wi-Fi planned in many Sacramento parks as City Council approves Verizon deal," *Sacramento Bee*, June 6, 2017. http://www.sacbee.com/news/local/news-columns-blogs/city-beat/article154728374.html.

[16] Letter to Mayor Steinberg from Lani Ingram, Verizon Vice President of Smart Cities and Venues sent January 10, 2017; Email between Maria MacGunigal and Crystal Strait titled "Kickoff PPP Discussion" sent February 8, 2017; received via information request June 14, 2018.

[17] P3, Exhibit C, page 46. The Statement of Work was required to have been completed within 60 days of passage. It is problematic that both parties failed to complete the Statement of Work, as required, but is also concerning that the Agreement was written to allow passage without inclusion of critical information that would dictate the costs and work details associated with the network buildout.

[18] Strategic Joint Development Agreement, Item H (page 2).

[19] Email between Maria MacGunigal and Lani Ingram, Hubert Riley, and Darin Arcolino titled "PPP Draft" sent May 5, 2017; received via information request June 14, 2018.

[20] Email between Maria MacGunigal and Scott Shipman, Hubert Riley, Lani Ingram, Darin Arcolino, Matthew Ruyak, and Jerry Hicks titled "Re_Draft Agreement" sent May 12, 2017; received via information request June 14, 2018.

[21] Wireline Deployment Agreement, Signed June 20, 2017.

[22] Email from Dean Peckham to Darin Arcolino titled "RE_City IT Wireless Projects" sent March 1, 2017; received via information request June 14, 2018.

[23] Ibid.

[24] 5 Bars, LLC was acquired by Neutral Connect Networks in July 2017. However, the 5 Bars Communities division that provides small cell wireless planning and marketing for cities was not part of the acquisition and continues to operate as XG Communities, LLC. https://neutralconnect.com/articles/press/neutral-connect-networks-acquires-5-bars-a-leader-in-deploying-das-systems-in-the-sports-and-entertainment-sectors/.

[25] Wireless Marketing Agreement between the City of Sacramento and 5 Bars, LLC, effective June 9, 2016.

[26] Email between Hector Barron, and Fedolia Harris and Maria MacGunigal titled "Fwd: Verizon Smart City MOU" sent January 17, 2017; received via information request June 14, 2018; Email from Joe Sutton of 5 Bars to Darrin Arcolino titled "MOU Memo" sent January 24, 2017; received via information request June 14, 2018.

[27] XG Communities LLC v. City of Sacramento, Case Number C088639, Third Appellate District.

[28] Email between Lani Ingram, and Maria MacGunigal and Darin Arcolino titled "Re: [E] Terms" sent March 2, 2017; received via information request June 14, 2018.

[29] Email from Maria MacGunigal to Darin Arcolino titled "Term Sheets with Comments and Edits" sent March 27, 2017; received via information request June 14, 2018; Email between Darin Arcolino, and Lani Ingram, Maria MacGinugal, and Hubert Riley titled "Today's Call" sent April 24, 2017; received via information request June 14, 2018.

[30] Verizon P3 Agreement, Specific Agreement A- Master Smart Communities Agreement, pages 29-33.

[31] Email between Lani Ingram, and Maria MacGunigal and Darin Arcolino titled "Re: [E] Terms" sent March 2, 2017; received via information request June 14, 2018.

[32] Verizon P3 Agreement, Specific Agreement A- Master Smart Communities Agreement.

[33] This term was discussed in an email between city staff members. Email from Maria MacGunigal to Darin Arcolino titled "Term Sheets with Comments and Edits" sent March 27, 2017; received via information request June 14, 2018; Information requests do not show what was provided to Verizon, however, Verizon and the City had established weekly meetings for discussions to meet their "high level aggressive timeline." Email from Maria MacGunigal to city staff titled 'Smart Cities PPP Verizon Initiative — update 2/13" sent February 13, 2017. Received via information request June 14, 2018.

[34] Email between Darin Arcolino, and Lani Ingram, Maria MacGinugal, and Hubert Riley titled "Today's Call" sent April 24, 2017; received via information request June 14, 2018.

[35] Ibid.

[36] Ibid.

[37] Ibid.

[38] Op. cit. note 33.

[39] Op. cit. note 33.

[40] Email between Darin Arcolino, and Lani Ingram, Maria MacGinugal, and Hubert Riley titled "Today's Call" sent April 24, 2017; received via information request June 14, 2018

[41] Op. cit. note 33.

[42] Lum, E. "United States 5G Fixed Wireless Access Case Study, Verizon Wireless & City of Sacramento," January 2019.

[43] Verizon P3 Agreement, Specific Agreement A- Master Smart Communities Agreement, pages 29-33.

[44] Confirmed via information request #P014501-041719 received April 19, 2019.

[45] Rodd, S. "Sacramento scraps plans to install Verizon kiosks." *Sacramento Business Journal*, November 12, 2018. https://www.bizjournals.com/sacramento/news/2018/11/12/sacramento-scraps-plan-to-install-verizon-kiosks.htm.|

[46] Verizon P3 Agreement, Wireline Deployment Agreement, page 3.

[47] Verizon P3 Agreement, Specific Agreement A- Master Smart Communities Agreement, pages 29-33; Verizon P3 Agreement, Specific Agreement B- Wireless and Wireline Deployment, pages 59-60.

[48] McCauley, R. "Demonstration Partnership Policy Readies Sacramento, Calif., for Smart City Pilots," *GovTech*, May 5, 2017. https://www.govtech.com/fs/Demonstration-Partnership-Policy-Readies-Sacramento-Calif-for-Smart-City-Pilots.html.

[49] City of Sacramento Demonstration Partnership Policy. Available at: https://www.cityofsacramento.org/City-Hall/Policies-and-Procedures.

[50] VZ fiber deployment map; VZ small cell deployment map; Data from Statistical Atlas maps, which are derived from U.S. Census data.

[51] Horwitz, J. "Report: Verizon 5G Home service too expensive to scale, attracts few users," *Venture Beat*, March 22, 2019. https://venturebeat.com/2019/03/22/report-verizon-5g-home-service-too-expensive-to-scale-attracts-few-users/.

Moffet Nathanson, "Peek Behind the Curtain of Verizon's 5G Rollout," March 20, 2019.

Lum, E. "United States 5G Fixed Wireless Access Case Study, Verizon Wireless & City of Sacramento," January 2019.

Warren, G. "Did Verizon Jump the Gun on 5G in Sacramento?" CBS 13, February 11, 2019. https://sacramento.cbslocal.com/2019/02/11/verizon-5g-sacramento/.

Vestberg, H. Verizon 4Q 2018 Quarter Earnings Call, January 29, 2019. https://www.verizon.com/about/investors/quarterly-reports/4q-2018-quarter-earnings-conference-call-webcast.

Horwitz, J. "Verizon: 5G Home won't expand until second half of 2019," *Venture Beat*, January 29, 2019. https://venturebeat.com/2019/01/29/verizon-5g-home-wont-expand-until-second-half-of-2019/.

Jones, D. "Verizon CFO Reiterates Plans to Pass 30 Million Homes With 5G," *Light Reading*, November 14, 2018. https://www.lightreading.com/mobile/5g/verizon-cfo-reiterates-plans-to-pass-30-million-homes-with-5g/d/d-id/747597.

[52] Warren, G. "Did Verizon Jump the Gun on 5G in Sacramento?," CBS 13, February 11, 2019. https://sacramento.cbslocal.com/2019/02/11/verizon-5g-sacramento/.

[53] Anderson, M. "Sacramento's Verizon 5G coverage may be delayed by suit," *Sacramento Business Journal*, May 22, 2019. Verizon Communications, Press Release, "Verizon names 20 more U.S. cities where customers will get 5G Ultra Wideband network this year; preorder for the Samsung Galaxy S10 5G starts April 25," April 25, 2019.

[54] Email from Steve Smiley to Darin Arcolino titled "Wifi park coverage" sent April 10, 2017; received via information request June 14, 2018.

[55] Wireline Deployment Agreement, page 5, Section 1, paragraph iv.

[56] Arp, J. "City of Sun Prairie releases construction permits for downtown area near explosion," Channel 3000 News, July 17, 2018. https://www.channel3000.com/news/city-of-sun-prairie-releases-construction-permits-for-downtown-area-near-explosion/769418541.

Bowden, B. "OSHA cites 2 contractors in Sun Prairie Explosion," WPR, January 10, 2019. https://www.wpr.org/osha-cites-2-contractors-sun-prairie-explosion.

[57] Wisconsin Department of Financial Institutions. Corporate records for VC Technologies, LLC. https://www.wdfi.org/apps/CorpSearch/Details.aspx?entityID=V026292&hash=646382736&searchFunctionID=bcfaece0-316d-4297-82f0-9646dbc3ad9f&type=Simple&q=vc+tech.

[58] KTVU Staff. "Contractor identified in massive, fiery San Francisco gas rupture." Fox KTVU. February 7, 2019. http://www.ktvu.com/news/contractor-identified-in-massive-fiery-san-francisco-gas-rupture.

Goldberg, T. "Contractor Tied to San Francisco Pipeline Explosion Didn't Have a License," KQED, February 15, 2019. https://www.kqed.org/news/11725622/contractor-tied-to-san-francisco-pipeline-explosion-didnt-have-a-license.

[59] Based on documents provided by the City of Sacramento through public records requests. This is not a full accounting of Verizon-related utility hits, due to the Department of Utilities changing its computerized maintenance management system (CMMS). The initial spreadsheet provided contained 41 incidents spanning from July 3, 2018 - January 28, 2019; DOU incident reports were provided for only 23 incidents spanning May 29, 2018 - January 1, 2019.

[60] Ticket number X812802818; May 28, 2018 — Ticket number X816302726; June 19, 2018 — Ticket number X826702109; November 1, 2018.

[61] California Secretary of State, Entity #2105382.

[62] See "USA_Incident_Reports_Redacted" file provided by City; received via information request February 2, 2019.

[63] OSHA Inspection #1111024.015 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1111024.015; OSHA Inspection #312915325, https://www.osha.gov/pls/imis/establishment.inspection_detail?id=312915325; OSHA Inspection #313481087, https://www.osha.gov/pls/imis/establishment.inspection_detail?id=313481087. As is common in these cases, the parties settled for a lower penalty and lesser violations than OSHA's initial citation. In the 2009 matter, the case settled with the company paying a penalty of $45,510 for eight violations, including one "serious" violation. In the 2010 matter, the case settled with a finding of one violation.

[64] California Secretary of State, Entity #4138669.

[65] 1. Ticket number X812802818; May 28, 2018. 2. Ticket number X816302726; June 19, 2018.

[66] Ticket number X812802818; May 28, 2018.

[67] Ticket number X816302726; June 19, 2018.

[68] Inspection # 1316721.015 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1316721.015. As is common in these cases, the case was resolved by settlement.

[69] California Secretary of State, Entity #3818529.

[70] Ticket number X826702109; November 1, 2018.

[71] Ibid.

[72] DOL Enforcement Database, Case ID #1682886.

[73] California Secretary of State, Entity #1858104.

[74] 1. Ticket number X815600943; June 12, 2018. 2. Ticket number W815700165; June 13, 2018. 3. Ticket number X815601897; June 18, 2018. 4. Ticket number X818402109; July 11, 2018. 5. Ticket number X822501274; September 21, 2018. 6. Ticket number X826801268; October 8, 2018.

[75] Melendrez v. JK Communications and Construction, 1:14-cv-01658-TLN-BAM. The case was later dismissed by agreement of the parties.

[76] Missouri Secretary of State, Charter #01355193.

[77] 1. Ticket number X815201131; June 12, 2018. 2. Ticket number X822500996; August 13, 2018.

[78] Inspection #1071938.015 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1071938.015. As is common in these cases, the parties settled for a lower penalty and lesser violations than OSHA's initial citation.

[79] California Secretary of State, Entity #2621807.

[80] Inspection #1248333.015 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1248333.015. As is common in these cases, the case was resolved by settlement.

[81] Inspection #1305752.015 https://www.osha.gov/pls/imis/establishment.inspection_detail?id=1305752.015. As is common in these cases, the case was resolved by settlement.

[82] Franchise Agreement between the City of New York and Mobilitie Investments II, LLC, January 4, 2012. https://www1.nyc.gov/assets/doitt/downloads/pdf/2011_Poletop_Franchise_Agreement_FINAL_Mobilitie_Investments_II_LLC.pdf p 63.

[83] City Council Memorandum attachment to Item "Actions Related to the Amendment to the Agreement with Mobilitie, LLC, for Permitting of Small Cells on City Owned Assets in the Public Right of Way," June 26, 2018. https://sanjose.legistar.com/LegislationDetail.aspx?ID=3523879&GUID=59994F1B-87CC-4FDC-9F9F-BD102384BC09&Options=&Search.

[84] City Council Report, "Establishing Local Hire and Community Workforce Training Program and Local Business Involvement Pilot program for Citywide Capital Improvement Projects." August 21, 2018. http://sacramento.granicus.com/MetaViewer.php?view_id=22&clip_id=4241&meta_id=532166.

About Us

The Communications Workers of America (CWA) represents 700,000 workers in the U.S. and Canada in telecommunications, customer service, media, airlines, public service, and manufacturing. CWA members are highly-trained, career technicians and service representatives who build and support our telecommunications networks. They are also consumers who rely on quality Internet service, and citizens who demand sensible and equitable telecommunications policy in alliance with other stakeholders. CWA envisions a universal broadband future where no one is left behind, with robust investment in a next-generation network that creates good jobs and connects all people.

501 Third Street, NW
Washington, DC 20001

www.cwa-union.org