EMPLOYMENT IMPACT OF INVESTMENT IN THE FIBER-TO-THE-PREMISE NETWORK

$5.9 billion Investment Creates Nearly 72,000 jobs

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Fiber-to-the-Premise (FTTP) is an all-fiber optic telecommunications network that allows telecommunication companies to deliver high-speed, multimedia services directly to the consumer-premise. The largest U.S. provider of FTTP is Verizon Communications Inc. with its FiOS network.

This analysis estimates the employment impact of an expansion of the FTTP network infrastructure developed by Verizon. Under current franchise agreements, the FTTP network is expected to pass 18 million premises by 2018, accounting for 70 percent of premises within the Verizon wireline footprint.[1] Further expansion of the FTTP infrastructure will have a positive employment impact due to capital investment in construction and installation.

The analysis projects the total employment impact of an expansion of the FTTP network to 95 percent of Verizon's wireline footprint to be 71,710 job-years. The employment projections include direct employment impact from capital expenditures in primary industries, as well as indirect and induced impacts.

Analysis

The analysis estimates the job impact from an increase in capital expenditures above the baseline of no expansion of the Verizon's FTTP network infrastructure beyond existing franchise agreements. The analysis looks at the expansion of the FTTP network from its current franchise obligations to 90 percent, 95 percent and 100 percent, respectively, of the wireline footprint. An expansion to 95 percent would increase the number of premises passed by the FiOS network by 6.4 million.

The national IMPLAN model by MIG Inc. was used to translate capital expenditures into number of jobs supported. The IMPLAN model is an input-output model that describes commodity flows from producers to intermediaries to consumers. The model estimates

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[1] Verizon Communications at UBS 39th Annual Global Media and Communications Conference, Dec. 7, 2011; see also Peter B. Davidson, Senior Vice President, Verizon Federal Government Relations to U.S. Congressman Michael Doyle dated June 1, 2012. "Our announced plan of passing 18 million households represents 70 percent of homes in Verizon's wireline footprint." Provided by the Communications Workers of America.

the number of direct, indirect, and induced jobs. Direct jobs are jobs created in the primary industries. Indirect jobs are jobs in the secondary industries supplying goods and services to the primary industries. Finally, induced jobs are generated by employees purchasing goods and services. The total employment impact is the sum of the direct, indirect, and induced impacts. In the IMPLAN model, employment effects are defined in terms of job-years, where one job-year is a single job in one year, e.g. 1,000 job-years equal an average of 100 jobs over a 10-year period.

The capital expenditures needed to expand the FTTP network infrastructure from 70 percent to 95 percent of the Verizon wireline footprint is estimated to be $4.5 billion (in 2011 dollars) in construction and an additional $1.4 billion (in 2011 dollars) in installation for subscribers.[2] The allocation of final-demand investment across the five identified primary industries is shown in Table 1. The calculation conservatively assumes that the penetration rate is constant over the investment timeframe.

TABLE 1: Industry composition for capital investment in the FTTP network infrastructure

Sector code	Sector description	Allocation	Investment ($ million)
351	Telecommunications	0.25	1,483
237, 272	Communication cable and equipment manufacturing	0.50	2,967
416	Electronic and precision equipment repair and maintenance	0.05	297
36	Construction of other new non-residential structures	0.15	890
369	Architectural, engineering, and related services	0.05	297
Total		1.00	5,933

SOURCE: Author's analysis. Note: Communication cable and equipment manufacturing combines communication and energy wire and cable manufacturing and telephone apparatus manufacturing. Capital investment is for a 95% build out of the Verizon wireline footprint. Dollar amounts are in 2011 dollars.

Findings: Expanding the FTTP Network to 95 Percent of Verizon's wireline Footprint Adds Nearly 72,000 Job-Years

The projected employment impact of expanding the FTTP network infrastructure from 70 percent of Verizon's wireline footprint to 95 percent of the footprint would have an estimated direct employment impact of 18,754 job-years, distributed across five primary industries. The indirect impact in the supply chain is estimated at 20,914 job-

[2] Goldman Sachs model, January 25, 2012. Estimated construction capital expenditures were an average of $700 per residential premise and installation capital expenditures were $625 per residential subscriber. The analysis assumed that installation costs were the same for residential and business subscribers and remained constant over time, after adjusting for inflation.

years, and the induced impact at 32,042 job-years. The total projected employment impact is 71,710 job-years. It should be noted that a job-year is a single job in one year. If the duration of the expansion of the network were five years, then an average of 14,342 jobs would be created above the baseline in a year.

TABLE 2: Employment impact of capital investment in expanding the FTTP network infrastructure to 95% of Verizon's wireline footprint

	Direct	Indirect	Induced	Total
Low-end	15,890	19,005	28,951	63,846
Intermediate	18,754	20,914	32,042	71,710
High-end	22,218	23,330	36,228	81,776

SOURCE: Author's analysis using the IMPLAN model.

The estimates are robust to a variety of different underlying assumptions about penetration rate, marketing scale, industry composition, and construction and installation costs. The analysis determined the projected employment impact to range from 63,846 for the low-end case to 81,776 for the high-end case.

The above projections are based on an expansion to 95 percent of the Verizon wireline footprint. The analysis also looked at an expansion of the FTTP infrastructure to 90 percent and 100 percent of the footprint. A complete expansion of the FTTP network would add 7.7 million premises above the baseline and have an estimated total employment impact of 86,055 job-years. Finally, it should be noted that the projections assume no population growth in the Verizon wireline footprint, and the actual impact could be higher than projected.

TABLE 3: Employment impacts of an expansion of the FTTP network infrastructures to 90%, 95% and 100% of the Verizon wireline footprint, intermediate case

	Direct	Indirect	Induced	Total
100%	22,507	25,097	38,451	86,055
95%	18,754	20,914	32,042	71,710
90%	15,005	16,731	25,635	57,372

SOURCE: Author's analysis using the IMPLAN model.

Penetration Rates

The intermediate projections assumed that the FiOS penetration rate, defined as the number of subscribers as a percentage of the number of customer premises open for sale, would stay constant at 36.4 percent.[3] This is a conservative assumption as the

[3] Verizon Communication, Financial and Operating Information, March 31, 2012, http://www22.verizon.com/idc/groups/public/documents/adacct/2012_q1_foi_xls.xls. The high-

Internet penetration rate has increased from 29.0 percent in the 1st quarter of 2010 to 36.4 percent in the 1st quarter of 2012, and is expected to further increase as the FiOS market matures.[4] With further market penetration, increased capital investment in installation will have a positive economic effect. Table 4 shows the increase in subscribers, capital expenditures, and the employment impact of an increase of the penetration rate by 1 percentage point per year from the current rate of 36.4%. The projected employment impact of an approximate 23,500 job-years by 2025 is from an increase in penetration rate alone, and is in addition to the estimated impact of 71,710 job-years deriving from an expansion within the wireline footprint.

TABLE 4: Additional impacts of a change in penetration rates by 1 percentage point per year, 2012-2025

	Chg. in subscribers	Chg. in capital expenditures (in $ mill.)	Chg. in employment
Under current franchise agreements	1,058,400	$661.5	7,998
Under new franchise agreements	2,053,800	$1,283.6	15,517
All	3,112,200	$1,945.1	23,509

SOURCE: Author's analysis using the IMPLAN model. Note: The calculation assumes 95% coverage of the wireline footprint. The calculation is based on an increase in the penetration rate from current level of 36.4% to 49.4% over a 13-year period.

Conclusion

The analysis, using input-output modeling, projects a direct employment impact of 15,890 to 22,218 job-years for a 95% build out of the Verizon wireline footprint. The total projected employment impact, accounting for indirect impacts in the supply chain and induced impacts, range from 63,846 to 81,776 job-years for a 95% build out nationally. It should be noted that economic impacts deriving from high speed Internet and improved efficiencies by an established fiber optic network infrastructure were not considered in the analysis.

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end projection assumed that the penetration rate for all FiOS products would increase to 40%, and low-end projection assumed that the penetration rate would fall to 35%.

[4] Verizon Communication, Financial and Operating Information, March 31, 2012, http://www22.verizon.com/idc/groups/public/documents/adacct/2012_q1_foi_xls.xls. FiOS data penetration is just over 50 percent and FiOS video penetration is just under 50 percent in "mature" markets such as Texas. See Verizon CEO Lowell McAdam statement at UBS 39th Annual Global media and Communications Conference, Dec. 7, 2011.

About the Author

Helene Jorgensen is an economic consultant. She is also a senior research associate with the Center for Economic and Policy Research. She received her Ph.D. degree in Economics from American University. She also holds an M.S. degree from George Mason University in Environmental Science and Policy. She is the author of the book *Sick and Tired: How the U.S. Health Care System Fails Its Patients*. Jorgensen has served as an advisor to the Census Bureau Advisory Committee on the Decennial Census and chaired the Bureau of Labor Statistics Labor Research Advisory Committee. She previously worked as an economist for the Public Policy Department of the AFL-CIO.

TABLE A1: Employment impact of capital investment in expanding the FTTP network infrastructure to 90% of Verizon's wireline footprint

	Direct	Indirect	Induced	Total
Low-end	12,712	15,204	23,162	51,078
Intermediate	15,005	16,731	25,635	57,372
High-end	17,775	18,983	28,983	65,422

SOURCE: Author's analysis using the IMPLAN model.

TABLE A2: Employment impact of capital investment in expanding the FTTP network infrastructure to 100% of Verizon's wireline footprint

	Direct	Indirect	Induced	Total
Low-end	20,715	23,100	35,391	79,206
Intermediate	22,507	25,097	38,451	86,005
High-end	24,812	27,668	42,391	94,871

SOURCE: Author's analysis using the IMPLAN model.