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TRENDS IN ALTERNATIVE FUEL CARS, SOLAR PANELS, AND INTERNET ACCESS AND USE

The Bureau of Business and Economic Research (BEBR) surveys about 500 consumers each month to gauge their confidence about the economy and their personal economic well-being. As part of its consumer sentiment surveys, BEBR began asking questions in April 2012 on a quarterly basis about consumers' access to the Internet at home and on a biannual basis about their ownership of alternative fuel cars and houses with solar panels. The questions were revised in July 2012 to: collapse alternative fuel questions, better capture whether houses with solar panels were purchased and the incentives governing the purchase, and to elicit responses about Internet service usage.

The trends have been pretty stable from April 2012 through July 2013 in most respects: Below is a summary of the findings:

ALTERNATIVE FUEL CARS

Over 8% of all respondents to the April 2013 survey claimed to own at least one alternative fuel car, with hybrid and natural gas vehicles accounting for more than electric or diesel-fueled cars. Although the questions changed from April 2012 to April 2013 regarding the type of alternative-energy vehicle owned, it appears that there is a slight increase in the ownership of hybrid cars, from eight in April 2012 to 15 in April 2013. This is still too small a number to conclude very much. The same number of natural gas vehicles (15) was reported to be owned by April 2013 respondents.

A law passed by the Florida legislature in 2013 may contribute to more purchases of alternative fuel vehicles in the future. Florida local governments are statutorily authorized, if approved by referenda, to use income from a locally-imposed infrastructure surtax to provide loans, grants, or rebates to residential or commercial property owners for the installation of electric vehicle supply equipment, in addition to gas fueling infrastructure for propane, compressed natural gas, and liquefied natural gas.[1]

SOLAR PANELS

Approximately 5% of all respondents lived in houses with solar panels in April 2013, the same percentage as in April 2012. The April 2012 survey did not ask whether respondents living in houses with solar panels had purchased the panels and if they did, whether they were motivated by incentives. The April 2013 survey tried to capture that information. In response to that survey three-fourth of the respondents had purchased solar panels and most were not motivated by incentives in doing so.

The survey did not ask respondents motivated by incentives which type of incentive contributed to their purchase decisions. A federal tax credit of 30% of qualified expenditures may be claimed for a solar system used in a taxpayer's residence. The tax credit took effect at the start of 2006 and will expire at the end of 2016 unless it is extended.[2] A state sales tax exemption also applies to Florida solar systems. This exemption took effect in July 1997 and has no expiration date.[3]

Whereas several Florida electric utilities (FPL, OUC, Lakeland Electric, and JEA) operate solar plants to generate electricity, Gainesville Regional Utilities (GRU) adopted another approach. GRU

offered its customers the opportunity to install solar systems on their roofs, with a promise to buy back at a premium the energy produced by those systems (otherwise known as feed-in tariffs).[4] As authorized by the 2006 Florida Renewable Energy Technologies and Energy Efficiency Act, state rebates were also available for the purchase of solar energy systems in homes and businesses. However, the money is no longer available and the rebate program is now closed.[5]

According to a recent federal report, there has been a substantial reduction in installed solar system prices, particularly from 2009 through 2012. However, at least from the consumer's perspective, these declining prices have been significantly offset by a reduction in state and utility photovoltaic incentive programs.[6] The previously mentioned expiration of Florida state rebates as well as limits on the GRU feed-in tariff program may affect purchases in the future. Nonetheless, at least based on BEBR survey responses, the number of people living in houses with solar panels in Florida continues to be low (around 5%).

INTERNET SERVICE ACCESS AND USE

BEBR started asking survey respondents about Internet in their homes in the April 2012 survey and continued to ask quarterly about Internet service access in addition to Internet service use in subsequent surveys beginning in July 2012.

Internet service access was reported in the majority of respondents' households – 83% in April 2012, compared to 85% in July 2013. Access is different than respondents' usage and various platforms exist to enable access. The BEBR surveys provided several options, including cable modems, digital subscriber line (DSL) from phone companies, dial-up, satellite, wireless, or fiber. Dial-up connectivity, which is very slow, is pretty much a thing of the past, with roughly 1% of all types of connectivity reported by respondents in July 2013.

The BEBR surveys specified in its questions that wireless connectivity is wireless service provided through a cell phone provider. The underlying idea for that specification is that fixed wireless service would require connectivity through another platform. In the most recent survey (July 2013), 7% of respondents with Internet service at home indicated they access the Internet through their cell phones. The numbers are too low to reach definitive conclusions but the July 2013 surveys found that the average age of respondents who accessed and used the Internet through their cell phones at home was older (over 66 years old) than that of respondents who accessed and used the Internet at home through all platforms (over 57 years old).[7]

Fiber connectivity is also slowly emerging as an alternative to other modes of connectivity with 8% of total household connections in respondents' homes. Fiber was not specified as an option in the April 2012 survey but it was beginning in July 2012, when the same percentage of respondents -- 8%-- reported fiber connectivity in their homes.

The BEBR quarterly surveys did not pose questions about speed although the FCC reports that fixed and mobile services have been shifting to higher speeds.[8] Fiber to the premises (FTTH) provides the highest speed, on average, of all terrestrially-based connectivity options. Even though its deployment and adoption is increasing in the U.S., FTTH is still restricted to urban and suburban areas of Florida and still accounts for a relatively small segment of the U.S. market. A review of zip codes associated with fiber subscription in BEBR's quarterly surveys shows that to be the case. It costs a

provider more to install fiber systems to individual homes than it does to install DSL or cable modems, all things equal.

In terms of fixed connectivity in BEBR respondents' households, cable modem connectivity is reported most often in each quarterly survey, followed by DSL, with the ratio of cable to DSL declining since April 2012 when the ratio was 1.6 to 1.0. In July 2013, the ratio of cable modem to DSL connectivity was 3.4 (cable modems) to 1.0 (DSL).

The most recent FCC report on Internet access service at the time of writing refers to Internet service connections as of June 2012. That report shows the ratio of cable modem connectivity to DSL in residences to be 1.7 to 1.0.[9] The relative proportions for cable modems and DSL have changed quarterly in BEBR surveys but cable modem connectivity has continued to represent a larger proportion of access relative to that of DSL in each quarterly survey.

In the U.S. DSL connectivity had increased gradually through 2011, when it plateaued. In Florida, DSL connectivity deployment peaked in June 2011, and went down by 7% in June 2012.[10] Cable modem connectivity in Florida, on the other hand, has continued to go up since 2008 (about 26% from December 2008 through June 2012) but has begun to level off. In the U.S., cable modem connectivity went up by 23% from December 2008 through June 2012, including 6% from June 2011 through June 2012.[11]

Satellite connectivity continues to represent a small segment of total broadband access in both U.S. and Florida households. In June 2012, satellite connectivity accounted for 0.5% of total residential connectivity in the U.S. for speeds exceeding 200 kbps.[12] Although the question was posed differently to households in the BEBR survey (which made no reference to speed), responses in various quarterly surveys from April 2012 through July 2013 indicated that approximately 1-2% households accessed Internet service through satellite, also still a very small segment of total households.

Even though respondents may indicate that their household has access to Internet services, they themselves may not be accessing the Internet at home or at all. In July 2012, BEBR started to ask about respondents' usage. In July 2013, 85% of respondents reported having Internet access and 78% of respondents reported using the Internet at home. The BEBR survey also asks for respondents' ages. The average age of those who used the Internet from home was younger (58 years old) than those who did not use it at home (almost 69 years old).[13] Over 39% of those accessing and using the Internet at home reported being 65 years old and older. A year earlier (July 2012), 81% reported having Internet access at home and 78% of respondents used the Internet from home. Of those reporting their age and the use of the internet at home, over 30% were 65 years and older.[14] Access seems to have increased in a year but the percentage using Internet services at home is the same. One might also be seeing a growing trend of aging Floridians using the Internet at home.[15]

Residential Internet connections have been increasing over time in the U.S. as a whole. The FCC reports an increase in total residential connections of 123% from December 2008 through June 2012, with the most significant increase in mobile wireless connectivity during that period.[16] A question in the future is the extent to which Internet residential subscribership for faster speed service constitutes the next digital divide and the extent to which higher speeds are really needed for respondents' home-based applications. The BEBR surveys did not ask about speed of service but, at least based on FCC estimates for Florida, residential subscribership is lower by 23% in June 2012 if the minimum of a download 3 Mbps speed is introduced.[17]

In July 2013, few respondents (3%) reported in BEBR's survey to having home business and all of them used the Internet at home. Many survey respondents reported using the Internet for entertainment as their primary application and certain applications will require increasingly higher speeds. As applications evolve, speed may become more of a factor for subscribers.

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[1] See U.S. Department of Energy, "Florida Laws and Incentives for Natural Gas," Alternative Fuels Data Center, http://www.afdc.energy.gov/fuels/laws/3253/FL (accessed August 16, 2013).

[2] See U.S. Department of Energy, "Federal incentives/Policies for Solar," DSIRESOLAR, Database of State Incentives for Renewables & Efficiency, http://www.dsireusa.org/solar/incentives/incentive.cfm?Incentive_Code=US37F&re=1&ee=1 (accessed August 16, 2013).

[3] See U.S. Department of Energy, "Florida Incentives/Policies for Solar," DSIRESOLAR, Database of State Incentives for Renewables & Efficiency, http://www.dsireusa.org/solar/incentives/index.cfm?re=1&ee=1&spv=1&st=1&srp=0&state=FL (accessed August 16, 2013).

[4] See Kevin Spear, "Florida's Solar Energy Really Sizzles in April," *Orlando Sentinel*, April 4, 2013, http://articles.orlandosentinel.com/2013-04-04/news/os-florida-utilities-mixed-solar-performance-20130404_1_florida-solar-energy-center-ouc-central-florida (accessed August 16, 2013).

[5] See Florida Department of Agriculture and Consumer Services, Solar Energy Systems Incentives Program, http://www.freshfromflorida.com/offices/energy/solar_rebate/index.html (accessed August 16, 2013).

[6] See Galen Barbose, Naïm Darghouth, Samantha Weaver, Ryan Wiser, *Tracking the Sun VI: An Historical Summary of the Installed Price of Photovoltaics in the United States from 1998 to 2012*, Lawrence Berkeley National Laboratory, July 2013, http://emp.lbl.gov/sites/all/files/lbnl-6350e.pdf (accessed August 27, 2013).

[7] Excluded were those who did not report either age or platform or who did not use the Internet themselves.

[8] The FCC includes this information in a report that is issued twice a year on Internet access services. The data are derived from Form 477 which gathers standardized information about subscribership to Internet access services in the U.S. as reported by telephone companies, cable system operators, terrestrial wireless service providers, satellite service providers, and other facilities-based providers of advanced telecommunications capability. See Federal Communications Commission, *Internet Access Services: Status as of June 30, 2012*, May 2013, 1, http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0520/DOC-321076A1.pdf (accessed August 27, 2013).

[9] Ibid., Table 6 (Residential Connections over 200 kbps in at Least One Direction by Technology 2008-2012 In thousands) and Chart 7 (Residential Connections by Technology as of June 30, 2012). The FCC makes a distinction between aDSL (asymmetric DSL) and sDSL(symmetric DSL) but the former is by far the most common type of DSL. The BEBR surveys do not make a distinction.

[10] Ibid., Table 19 (ADSL Connections by State 2008-2012; Connections over 200 kbps in at least one direction, in thousands). This table refers specifically to aDSL. Includes businesses as well as residential connections. Businesses account for 19.2% of total subscribers in the U.S., in Florida 20.3%. See Table 15 (Connections by Type of End User by State as of June 30, 2012; Connections over 200 kbps in at least one direction, in thousands).

[11] Ibid., Table 20 (Cable Modem Connections by State 2008-2012; Connections over 200 kbps in at least one direction, in thousands). Includes businesses as well as residential connections. Businesses account for 19.2% of total subscribers in the U.S., in Florida 20.3%. See Table 15.

[12] Ibid., Table 6.

[13] Nine respondents refused to report their age so the percentages were based on those who did.

[14] This is the weighted average since the average age of respondents in the combined July 2012 and July 2013 surveys was different.

[15] This finding appears to be consistent with that of the Pew Internet & American Life Project which surveys American adults' adoption of Internet services in general. The Pew Internet & American Life Project surveys are not confined to use at home and will therefore show a larger percentage of adoption since adults who may not use

the Internet at home may use it outside the home. In April-May, 2013, the percentage of adults age 65 and older who used the Internet was 56% (http://www.pewinternet.org/Trend-Data-(Adults)/Whos-Online.aspx) (accessed August 27, 2013) and in February 2012 it was 48% (Usage Over Time Spreadsheet, (http://www.pewinternet.org/Trend-Data-(Adults)/Usage-Over-Time.aspx) (accessed August 27, 2013).

[16] Federal Communications Commission*, Internet Access Services: Status as of June 30, 2012*, Table 6.

[17] Ibid., Table 13 ((Residential Fixed Connections (Approximating the National Broadband Availability Target) and Households by State as of June 30, 2012; Connections with advertised speeds at least 3 Mbps down and 768 up and households, in thousands) and Table 14 (Residential Fixed Connections and Households by State as of June 30, 2012; Connections over 200 kbps in at least one direction and households, in thousands).