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Eileen Smith-Cavros
Nova Southeastern University

Arianna Sunyak
Fischler College of Education

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Cover Page Footnote

The authors would like to gratefully thank the off-grid neighbors in Cedar City, Utah, who participated in our survey and undertook off-grid living with their adventurous spirits. We also thank the three anonymous reviewers who provided helpful critique on this manuscript. Nova Southeastern University provided assistance, time, and space to enable the completion of this research.

RESEARCH ARTICLE

Off-the-Grid in an On-Grid Nation: Household Energy Choices, Intra-Community Effects, and Attitudes in a Rural Neighborhood in Utah



EILEEN M. SMITH-CAVROS
ARIANNA SUNYAK

ABSTRACT

This research is an investigation of the perceived positive and negative aspects of off-grid living in a middle to upper-class neighborhood in rural Utah in which no public utility grid was available for connection. Off-grid living is defined as unconnected to a public utility power grid, water, or sewer system. In the researched community, all individuals lived off-grid on minimum twenty-acre lots of land with single-household dwellings. We used surveys with closed and open-ended questions to qualitatively explore the local social effects (from individual attitudes to group identity to household economics to conservation attitudes) off-grid living had on individuals and households, and daily intra-community life. Our study group was a compelling community in which to ask this question since most of our participants came to live off-grid by chance as much as choice and they lived off-grid for a relatively long time (average of 9 ½ years). Among this group we coded responses into categories based on qualitative conversation analysis, word usage counts, and categorization and found the independence of off-grid living was perceived as a strong positive factor and the cost and time-intensive maintenance as negatives. Gendered work also affected attitudes about daily life and energy choices. In addition, living off-grid, particularly the use of solar energy, seemed to enhance a heightened sense of intra-community neighborliness among most residents.

INTRODUCTION AND FRAMEWORK

How does moving off the public utility grid in the United States affect the daily lives of those who live off-grid, including their intra-community social relations and the way they think about energy choices and energy use? We use the term ‘intra-community social relations’ to refer to interactions within the limited local neighborhood of the study.

Energy—‘the fuel or electricity used for power’ (Cambridge Dictionary 2015A)—is at the core of society in upper-income nations and is available in the U.S. through massive public utility grids. We need energy to stay warm or cool, cook our food, move water, access technology, and to facilitate education, communication, and work. We need intra-community social interactions to foster connected and healthy neighborhoods and societies. Leslie White’s (1959) classic work on energy looked

from evolutionary perspectives at ways in which changes in energy drove societal changes. While this paper does not take an evolutionary materialist perspective, we do acknowledge the ways in which energy and aspects of the social life are interrelated entities.

Energy sources and energy choices/abilities have intimately affected our lives in society from the ancient campfires that allowed our species to survive and socialize to the Industrial Revolution and beyond. Choices about energy today are driving what is one of the greatest environmental-social challenges in human history: climate change. Akella et al. (2009:390) note that reliance on coal, natural gas, and oil, threaten our environment and species.

In the United States, Konisky and Ansolabhere (2014:5) comment that some social scientists, including political scientists and those who research public opinion, have not been very vocal on energy and its impacts. There are certainly exceptions to this among social scientists, particularly among those who deal with policy. Kempton (et al 1993) addressed the importance of psychology in as it relates to effective implementation of renewable energy policies. Nadar and Beckerman (1978) examined the ways in which energy policy might improve quality of life through increased acknowledgement of consumer choices and voice. Nadar and Milleron (2010) examined societal and cultural aspects of and obstacles to energy transitions such as education and leadership and lack of these. Tainter and Taylor (2013:168) used historical and recent case studies to ask how human groups achieve sustainability or do not achieve it. Tainter (2014:94) also posits the question of whether we can address challenges like climate change without using more resources.

In the United States, the energy reality for over 99% of citizens is the public utility electrical grid as primary source. Bakke (2016: xxix), however, notes that the electrical grid is worn out, citing expanding power outages among other grid issues that pose economic and security risks, and she has found that

infrastructure in the United States “is being colonized by a new logic: little, flexible, fast, adaptive, local.”

Almost invisible are those who practice the most local energy culture in the United States—those who don’t get their energy from the public utility grid. When people live off-grid by choice or by chance, we researchers wondered, what local (intra-community and individual) social impacts might this highly minority energy lifestyle have?

Living off-grid has multiple meanings but we approach it from the most common: “off-grid: not connected to the main utilities and having your own power and water supply” (Cambridge Dictionary 2015B). While off-grid living includes not just energy access but also access to water and disposal of waste, our research focused specifically on the energy aspects of going off-grid. Many Americans other than off-gridders rely on well water and septic tanks. Also, a lifestyle is generally not considered off-grid unless electricity and/or gas source is off-grid as well. It is arguably the way off-gridders power their houses/appliances that keeps them distinct technically—and perhaps also affects them as social individuals and with intra-community social interaction.

International research has explored diverse social issues related to going off-grid. For example, the use and scarcity of traditional fuels like kerosene and wood in low-income countries in Africa drove negative social impacts from time-intensive labor, to harmful health effects, to safety (Mensah 2001; Neilsen 2013). In contrast, off-grid solar sources like lamps and/or small stand-alone solar systems in Bangladeshi, Kenyan, and Ethiopian case studies influenced positive social impacts such as: enhanced social status, empowerment of women with light for studying after their traditional chores, and increased social service access/activism (Khan 2001; Eaton 2015; Gebregiorgis 2015).

The multiple local and larger social benefits of moving from lives without electricity to lives with off-grid energy sources are clear internationally. However,

research on upper-income nations, where the energy switch is movement from on-grid living to off-grid living, is scarcer. The most comprehensive academic study related in part to social aspects of switching to off-grid in an upper-income nation was a Canadian study with 600 participants. Authors Vannini and Taggart (2014:1) noted that while off-gridders are often stereotyped as loners, the reality is that they actually have a great deal of engagement with others, with place, and with resources.

In addition, their studies found off-gridders connected with “voluntary simplicity values” such as lowering consumption (Vannini and Taggart 2013b:11).

In popular culture in the United States, the phrase “off-grid” or “off-the-grid” has taken on a social meaning of its own. Going off-the-grid in the vernacular means a loss of connectivity—when one decides to eschew technology and associated social contact (texting, instant messaging, Facebook, Twitter, Instagram, etc...) for a time period. People who truly live off-grid—off the public utility power grid in the literal sense—are even impossible to count with complete accuracy in the United States. There is no national database of those who live off-grid. Some communities have restrictive zoning and building codes that require connection to public utilities or have minimum square footage requirements for houses or other related limitations that may disadvantage or discourage some off-gridders. As a result, in some states there is little incentive for identifying as an off-grid household.

The Interstate Renewable Energy Council (Sherwood 2014) collects yearly data about on-grid solar installations nationally but they comment ‘based on anecdotal information, the size of [the off-grid] market is very small compared with grid-connected installations’ (2014, 8). An analyst in *USA Today* in 2006 (Money Section, 12 April) offered an estimate that there were about 180,000 off-grid households (Davidson, 2006, lines 55-57). Rosen (2010) estimated close to 500,000 off-grid homes by

2010. This modest off-grid movement is supported by information available in consumer-oriented magazines like *Off Grid* and *Home Power*, and has likely been buoyed by shows about solar power and green living such as Ed Begley’s *Living with Ed* (Appendix A1), TLC’s *Risking It All* about foregoing technology and off-grid experiments (Appendix A2) and National Geographic Channel’s backwoods *Living off the Grid* (Appendix A3). Modern media depictions of living off-grid tend to have in common a portrayal of individualism—though this is sometimes exaggerated or idealized. The sociological concept of modern American individualism is nonetheless what Bellah et al. (1986) referred to as one among the ‘three central strands of our culture’ (28) noting ‘individualism lies at the very core of American culture’ (142).

In spite of some popularization and romanticism of off-grid in the American media, academic research in the United States on contemporary off-grid living is limited. It is likely that the widest-scope snapshot view of people living off-grid across the United States is a popular-press book written by journalist Nick Rosen (2010) from the United Kingdom who spent months on the road doing interviews and participant observation. He spent time with hundreds of off-grid individuals and communities in dozens of states and categorized these people based on the reasons that they gave for choosing to live like they did, and his categories could be summarized as listed below (Rosen 2010:13-16). Rosen does note that most people he met had multiple reasons for living off-grid.

- alternative lifestyles
- second homes
- religious mandate
- off-grid ready/transitional (off-grid systems in place but still connected to grid)
- seeking to avoid the “surveillance society”/ultimate privacy
- economically-challenged individuals
- individualists/freedom seekers
- fear of societal collapse

What we can ascertain from the limited and mostly popular publications/media is that the off-grid lifestyle in the U.S. has evolved beyond the stereotypes of 1960s-style hippies, and loner recession-era survivalists. Some intentional communities like the 76-acre Red Earth Farms in Missouri (Scheidt 2013) have bylaws and policies centered around people who want to live within society yet more sustainably. There is a wider body of anthropological literature on these intentional communities informed by Etozi (1993) and Bellah et al. (1986) [as cited in Brown 2002:3]. Brown discussed the history of communitarianism as a ideology seeking to regain something that some people in the United States feel they had lost. This paper does not focus on a traditional intentional community. Instead, we focus on a community that is best described as unintentional. We define unintentional as non-pre-planned and comprised of individuals with various reasons for choosing a community that happens to have no grid access. However, the idea of the development of a sense of interdependence and general welfare demonstrated in social relationships, whether intentionally developed or not, nonetheless became a central one in the research and is highly applicable.

DATA AND METHODS

In our case study of a single off-grid neighborhood (described as the local community) in the western United States, ten residents living outside of Cedar City, Utah were interviewed (5 men and 5 women) in 2014-2015. Cedar City is a town with a population of 29,483 reported in 2014 (U.S. Census) housing Southern Utah State University. It is located in close proximity to several national parks, and the town hosts the Utah Shakespeare Festival in the summer, making it a small town that draws an unusual number of domestic and international tourists. It has also become a popular retirement destination and vacation home venue—particularly to residents of California and Nevada. This is relevant to the project in that our interviewees were primarily retirees or semi-retirees from out-of-state who settled ten miles outside of Cedar City in an area

that was not connected to any municipal utility grid.

The area in which interviewees live/d (some still live there now, others have moved) was unique in several respects. The entire neighborhood as we defined it was, at the time of study, off-grid, lacking an accessible grid, and on a semi-private road. All households were sited on minimum 20-acre non-subdividable (by deed) parcels. A 3-mile private gravel road separated this neighborhood from the nearest paved road. All homes in the sparsely populated immediate area (including other households not available or unwilling to participate in interviews) were on private wells (some neighbors shared a well, most did not) and septic tanks, and as mentioned previously, powered entirely by off-grid sources. Houses ranged from five-thousand square feet to less than two-thousand and all were owner-occupied. Recent selling prices of homes in the area ranged from \$125,000 to over ½ million dollars. All interviewees were over 55 years of age. Most neighborhood residents hailed from areas outside of Utah: primarily California and Nevada. Vannini and Taggart noted that “most off-grid builders are able-bodied, well-educated, and in possession of a relatively strong social and economic capital,” (2014:14) and our participants generally fit that description. No one in the delimited neighborhood of the study lived on-grid in the study area, so there was no comparison group.

Using the case study perspective of Robert Stake (2003), this was a ‘collective case study’. It examined multiple individuals and households to provide exploratory insight on larger issues about energy generation and aspects of social life. However, Stake (2003:136) noted that categorization of case studies is not always clearly delineated, and our case study also had aspects of an ‘intrinsic case study’ wherein we hope, as Stake described, that “stories of those ‘living the case’[s] will be teased out.”

The lead author of this paper lived in this off-grid community for a three-year period that began eight

years prior to initiation of the research and ended years before the research began. In order to minimize researcher bias, the co-author (who had no prior connection with the off-grid community) carried out most telephone/email contact with participants, including most initial contacts, gained informed consent, and sent/received surveys and follow-ups for this project.

Participants were contacted by phone and those that agreed to participate numbered ten individuals out of 13 immediate/adjoining neighbors. We were unable to make contact with an additional 4 people with houses in the neighborhood as not all houses were consistently occupied or responsive. The small sample size was an obvious limitation. However, living completely off-grid is a highly unusual circumstance in the U.S., particularly for the long average length of time our participants lived off-grid. While the collective case study examined a small sample, it is nonetheless a potentially valuable and enlightening sample due to its uniqueness.

These 10 participants completed and returned mailed surveys which included closed and open-ended questions about off-grid living. Each participant was originally requested to fill out a separate survey (from the partner with whom they lived), however one couple/household preferred to fill out a joint survey as they felt they had the same answers/attitudes toward all questions, and we agreed out of respect for participants' time and opinions. Mailed surveys and phone contact were used (as opposed to face-to-face interviews or phone interviews) to minimize bias. The co-author, who had never met the participants, did all phone contact with participants. In order to further minimize bias, the authors also removed identifying data on specific individuals prior to data analysis to avoid attaching individual identities to comments. The surveys were then initially analyzed through theme-based qualitative analysis to examine attitudes about off-grid living, the social life, energy sources and participant-perceived costs and benefits and attitudes

about their neighborhood and environment. Through thematic analysis, the central themes that arose in responses to specific questions were identified and examined by counting/examining repeated words, related phrases, and ideas. Independent unexpected themes—those not directly related to specific questions we posed—about off-grid living and the social life that arose were also included.

While the surveys were simple and straightforward and the study was not ethnographic in focus, we were nonetheless inspired by the ideas and flexibility of grounded theory (Charmaz 2006:58) wherein researchers allow themes to emerge from the data and then flesh them out through categorization, memoing, and coding, including *in vivo* codes, attempting to stay true to participant meaning. Categorization of themes as more important or less important was developed from the surveys through qualitative analysis based on listing by participants. Recurring words, the most frequent repeated words, were counted and related words categorized as well. For example, one of the most common words was independence, so after determining this via word count, the coder then searched for any other related words or phrases (i.e., “not dependent on the power company”) to connect (see Figure 1 for word cloud example). Themes like ‘close-knit’ [neighborhood/community] and ‘time servicing [solar] system’ were also ascertained as important in this way. Unexpected themes like gendered tasks and solar also arose from word counts and theme counts as we noticed women mentioning keywords and issues men did not such as housework, laundry, and other gender-stereotyped tasks. Depending on their context, specific issues related to off-grid living that participants brought up were further categorized as positive or negative aspects of living off-grid in terms of how they were described/detailed by participants. In addition to qualitative research, quasi- (most or few participants) and limited-quantification (8 out of 10 participants) were used to record the simple number and/or percentage of respondents by answer/content.

RESULTS

Participants reported living entirely off-grid for an average of 9 ½ years—a unique sampling given the relative rarity of long-term off-grid living in the United States with estimates ranging from 180,000 to 750,000 households (Bell 2016; Koch 2010). We asked our research participants various questions to determine why and how they lived off-grid as well as their satisfaction/dissatisfaction with off-grid and whether/how it affected their individual and neighborhood/intra-community lives.

Interviewees had varied mixed-use of energy sources in their households, but trends emerged (Table 1). All interviewees reported using active, as opposed to passive, stand-alone photovoltaic solar energy systems with 8 interviewees using 100% solar for lighting/electrical needs and 2 at 50% for solar lighting/electrical. All residents also used propane to some extent with some relying more heavily on it, others less. For example, 8 of the 10 interviewees used between 40%-100% propane for heating and cooking and 2 reported just 10% for heating. Propane was delivered from local companies to onsite household tanks. Two of the 10 relied heavily on diesel-fueled generator power (up to 40%) and the rest used their generators primarily for back-up power on heavy-use days or during long periods of low sun. Two of the 10 relied on a woodstove for 10% of heating needs.

The reasons for participants' decisions to live off-grid varied—however the neighborhood clearly could not be classified as an intentional community (defined in prior section). The majority of respondents (6 of 10) would actually have initially preferred utility grid-connected (on-grid) living had it been an option. Living on-grid in this neighborhood was not a financial option for most participants given the initial cost estimate for extending lines to this neighborhood as proposed by the municipal power company (Rocky Mountain Power). At the point when the first residents built their homes, there were fewer neighbors and the cost to bring power

lines out to the remote lots when split across two or three households (mostly unbuilt) at the time seemed cost prohibitive. This left off-grid sources of power as the only option for those who strongly wanted to buy these particular large remote lots. Their appeal lay in being an isolated area bordering vast public Bureau of Land Management lands and Three Peaks Recreation Area, with fairly easy town access, zoning ability to keep horses and livestock, and breathtaking views of the nearby mountains. When new residents moved in, the original residents had already invested in costly solar-centered systems and propane appliances, therefore there was less financial incentive to encourage going on-grid even later when the cost for running lines to the properties would have been lower and split amongst more neighbors.

The survey was a mix of open and close-ended questions about participants' experiences living off-grid, why they chose off-grid, whether they enjoyed it, how/if it affected their lives and energy use. After some questions about their household composition, number of years off-grid, and energy sources, interviewees were asked the open-ended question: "Did you/do you enjoy living off grid? Why or why not?" Overall 7 of 10 reported that they enjoyed off-grid living overall and one respondent characterized it as "*okay*." Two of the interviewees from one household disliked off-grid living completely and resoundingly. Two interviewees included in the 7 of 10, one of whom was the most knowledgeable of all in terms of electricity and mechanics, described that their off-grid living was exactly the same as on-grid.

Interviewees were then asked to describe the positives and negatives of living off-grid through the following questions:

1. "What were/are the positives of living off-grid?"
2. "What were/are the negatives of living off-grid?"

These open-ended questions at the beginning of survey helped us ascertain some qualities and themes people found important about off-grid without biasing participants by mentioning words

TABLE 1. Interviewees' Use of Energy Sources.

	Active (as opposed to passive) solar energy system	Solar for all lighting/ electrical	Solar for ½ lighting/ electrical needs	High propane use for heating cooking (40%+)	Low propane use (10% or less)	Woodstove 10% or more heating needs	Heavy reliance on diesel generator (up to 40% of energy needs)	Low reliance on diesel generator (used primarily as back-up)
ID1	X	X		X		X		X
ID2	X	X		X		X		X
ID3	X	X			X			X
ID4	X	X			X			X
ID5	X	X		X				X
ID6	X	X		X				X
ID7	X	X		X				X
ID8	X	X		X				X
ID9	X		X	X			X	
ID10	X		X	X			X	

X denotes individual survey participants
Sample size: 10 individuals

like environment or sustainability or renewable energy. Two respondents stated there were no positives to living off-grid. The positives listed by participants, beginning with most popular responses, were: independence, empowerment/pride, resource conservation, and the close connection with neighbors (see Figure 1 Word cloud for samples). Eight participants out of ten discussed independence, the most frequent 'positive' factor and theme in this research. This was measured by both the literal words "independence" and "not depending" and also

coding for related explicit expression/description of independence as a 'positive' such as: descriptions of no electric bills, independence from the public utility grid itself (blackouts, service issues), independence from the utility companies, and independence from the government. One participant, for example, commented positively about about not paying money to the electric company and not depending on anyone else. And another noted how they always had electricity even when the nearby city had blackouts. Feelings of pride and empowerment were

FIGURE 1. Word Cloud on positive aspects of off-grid living.



themes associated positively with independence. Empowerment was coded by examining phrases that denoted ‘control’ and ‘positive feelings’ about it. For example, one participant wrote of its benefits, “*Having control over our own separate power grid*” and another added, “*I enjoy the feeling of independence it affords me.*” Another commented “*It is a fun challenge and I have learned a great deal.*”

Resource conservation (as determined by coding of the words environmental, conservation, and related phrases) was also a theme discussed as positive by most participants (5) but it did not take the primary focus in their survey answers that the theme of independence did.

While the way people related to their nearby (also all off-grid) neighborhood/neighbors was mentioned as a ‘positive’ by a single participant, we also asked a specific question about this on the survey: “How would you describe the atmosphere in your off-grid neighborhood? How does it compare to other places you’ve lived? (i.e., how well did you know neighbors, how much neighbor contact, etc...).” The comments revealed their neighborhood as quite close-knit (7 of 8 people emphasized this with one calling it the most comfortable place the participant had ever lived. Seven of 8 of the “close-knitters” attributed it at least in part to the interdependence of off-grid living situation as exemplified by the following quote, “*Our neighborhood is great and I think living off grid is partly why—everyone helps each other when installing*

solar or if there is a problem with it.” Participants confirmed there was increased contact between neighbors as they compared their off-grid systems. A neighbor explained:

The basic philosophy in this area is: “You need your neighbors to live and they are always ready to help.” If we have come to be very close with all neighbors (nearest neighbor is ½ mile by car). Most comfortable place I have ever lived – atmosphere, people, noise, etc...

Another reiterated the tightness of the community and the reliance on neighbors’ expertise saying, “*It’s probably the best part of our community—we all help each other.*” One summed it all up by saying, “*I have never been closer to my neighbors in my life.*”

All participants were also asked: “What were/are the negatives to living off-grid?” In terms of “negative” themes the expense of off-grid energy systems (e.g., batteries, panels, inverters, upkeep of components) easily topped the list (coded by specific mention of expense, dollars, finances). This was followed by inconvenience and time spent servicing systems (coded by specific mentions of time, repairs [nonwithstanding expenses], tools required) as well as aesthetics (“*unsightly*” panels). One responder stated there were no negatives.

Eight of 10 of the participants had positive or

strongly positive views on continuing to live off-grid in the future. This was measured by their answers to a question about whether they would choose off-grid again if they had the choice as well as whether they would recommend off-grid living to others. Two respondents (same household) were clear that they would never live off-grid again and commented that the existence was cave-like and highly limiting.

Most participants acknowledged that living off-grid affected how they used energy. There was strong concern and frustration from two responders that being off-grid stifled even responsible energy use. There were lesser related concerns from others, for example, one woman remarked that she couldn't do laundry unless it was sunny. Eight out of ten responders expressed fairly to mostly positive statements about off-grid effect on energy use including that they were more "*conscious*" of energy usage, more "*conservation-minded*," and more knowledgeable about energy systems/usage. The same 8 of 10 responders reporting positive effects also expressed strong positive beliefs in tax incentives/credits for households using solar and other renewable energy sources after being asked whether or not they thought there should be tax incentives for off-grid living.

We did not ask questions about gender and energy (aside from recording sex of survey takers), however, gender was a repeating theme that arose from analysis. In this small community all households were headed by opposite sex couples over the age of 55 and men reported doing most or all of the work on the maintenance of household off-grid systems including solar, propane, and also work on their properties' wells/pumps. As we read through the responses, a gender theme arose. We counted household tasks participants reported undertaking and these were gendered (by traditional gender-task stereotypes). Men were much more likely to discuss the great time commitments needed to upkeep and repair their off-grid systems. Indeed, men were the only ones to directly discuss doing major repairs to the off-grid system. Women, on the other hand, reported

more off-grid frustration with convenience aspects related to doing the laundry or dishes. Women also reported less to no knowledge, compared to their partners, of electricity systems/electric usage before living off-grid and they reported learning much more than men about energy/electricity by/after living off-grid. However, men also reported increasing the knowledge they already had about energy and off-grid systems substantially.

DISCUSSION

Our sample size in this qualitative case study project was small and our specific findings were not directly generalizable. However, our findings clearly demonstrated that for the studied group, living off-grid—particularly the renewable energy procurement aspects of solar energy—created impacts that affected participants' daily lives within their neighborhood/intra community and their own individual sense of identity. These impacts merit examination, consideration, and further exploration. In addition to being off-grid, the relative physical isolation of the neighborhood also interacted with and likely influenced findings—so results in a less geographically isolated or more urban space might have differed substantially. However, since multiple comments specifically mentioned aspects of living off-grid *and* using photovoltaic solar power (as opposed to geographic isolation) as being critical influencing social factors—we were able to separate out off-grid as a variable to an extent.

In countries where prior research on switching to off-grid energy sources was performed, the research generally followed people moving from traditional sources (e.g., wood and kerosene) to off-grid photovoltaic solar with the new amenity of electricity generating strong positive social impacts given increased access/abilities. In Canadian research, (Vannini and Taggart 2013a, 2013b, 2014, and 2015), many participants switching to off-grid from on-grid were focused on aspects of energy sustainability. Our case study was the very different switch of a small group of middle- to upper-class

Americans on-grid for their entire lives going off-grid—neither in an intentional community (as defined in prior section) nor for sustainability (for most). Indeed, the majority of our participants would have initially strongly preferred to be on-grid but for the high cost of linking their isolated lots to the public utility grid. Nonetheless, most of our participants ranged from ‘satisfied’ to ‘very satisfied’ with their off-grid experience in spite of it being a default choice for most—and a major lifestyle change in terms of maintenance and daily skill set. The two interviewees who strongly disliked off-grid living did not lack technical expertise or feelings of closeness to neighbors, but felt entirely constrained by off-grid living.

When participants discussed going off-grid, much of their focus was centered on their photovoltaic solar systems, these being the most visible, and (perceived) environmental aspect of being off-grid—as well as the aspect that required the most knowledge, cost, ongoing maintenance, particularly battery storage/upkeep, and back-up generators. No one discussed septic issues, few mentioned their deep wells/pumping household water, and while all discussed light to heavy propane usage there seemed to be no major issues with it, either positive or negative. So for this group, all, except two who saw off-grid living as essentially the same as on-grid, definitely identified with idea that off-grid was a major switch which was most heavily connected in perception and outcome, positive or negative, to their use of solar electricity.

Researchers in the Canadian off-grid study previously discussed noted many individuals they interviewed wanted to reduce dependence on fossil fuels/non-renewables (Vannini and Taggart 2013b:11) and participated in simpler living. As we discussed in the previous section, the primary and overwhelming positive to living off-grid for our participants was independence, with only two participants alluding to lifestyle simplification. The independence was also an issue of pride to participants—and the pride was related to a perceived change of personal social identity by living off-grid—going from the dependence

of on-grid Americans to off-grid independence. Empowerment and pride from off-grid or solar power projects has been highlighted by researchers in literature on development projects globally and in lower income nations and communities. One of the goals described by engineers and development experts working on a proposed photovoltaic project for aboriginal communities in Ontario described “pride in developing a sustainable energy system” (McLaughlin et al. 2010:9). The empowerment and pride factors related to independence were also apparent as themes in our research in this different and fairly affluent off-grid community. These factors contributed to overall satisfaction and intermixed with secondary pride specific to resource conservation as well as personal pride at learning new technical skills related to their solar energy systems.

The top negative themes were clearly the time and expense/inconvenience that existed in off-grid living. These issues generally related to solar power, which was considered high maintenance especially battery systems, and to back-up generators for the solar which produced noise and pollution. People living off-grid have often discussed serious time constraints akin to full-time employment (Stoner 2013:27). Stoner examined off-grid from perspective of someone who has lived it and in a community that decided it could be greener going on-grid. Among Canadian off-gridders “flicking on a switch required a different orientation: life off-grid demanded a much greater involvement in the generation and use of energy resources and fuel” (Vannin and Taggart 2015:17). In our study, whether this involvement, and related limitations, were perceived as negative or positive depended on the individual/household. Most people we interviewed found that living off-grid changed some choices, when to do the laundry, use hair dryer, etc... and some were bothered by this, minimally or greatly, while others described it more as a challenge than as a hardship.

There is a material reality to the way people experience off-grid living (e.g., tangible switch from grid to off-grid energy source, realities of

maintenance, cost/initial output). This confirms what Vannini and Taggart (2015:16) noted about the importance of “material practices” in off-grid living. There was also a strong role of social construction and individual/household perception in the way our participants experienced off-grid living. For example, our participants were people who lived similar material off-grid experiences with similar skill levels, similar (but not identical) financial situations, and similar previous on-grid experiences, yet they viewed their off-grid lives from a wide range of perspectives. While some described off-grid living as being cavelike (low light/in the dark), others enjoyed it in spite of more maintenance/some inconvenience, and others reported off-grid was “the same as being on-grid.”

Ideas about the cost of living off-grid were also dependent on social construction. Even among households with similar off-grid systems and home size square footage, the perceptions of the financial cost of living off-grid varied. About half saw it as being more expensive, or much more, than off-grid given the initial investment in solar systems. Half of the participants saw the cost as the same/close to same as on-grid given that with off-grid living there were no more monthly electricity bills. Even the perception that participants had of independence had strong aspects of social construction. There was certainly an independence, as described by most participants, from the local electricity grid as well as the municipal water and sewer providers—and even the government. However, most participants were also quite reliant/dependent for comfort on regular propane company deliveries, as well as on their neighbors for tools and/or expertise.

Our research adds interesting considerations about gender in the United States in relation to off-grid energy sources, usage, knowledge, and satisfaction. Household work has long been and continues to be gendered (Evertsson and Neramo 2004; Newport 2007) in spite of gains made by women in the paid workforce. While we did find strong gender roles in operation among the participants in relation

to household tasks and off-grid living, it was also interesting to see how, in households where this was true, women reported that off-grid living increased their knowledge of energy-related technical issues and usage issues. On one hand, some women felt the off-grid life constrained what was expected of them in terms of gendered chores and was sometimes a time burden. This was a contrast to women in the international research on off-grid living in that internationally having off-grid power freed up time for most women. However, internationally women reported empowerment and increased social standing and several of our female participants also reported satisfaction in increased knowledge about off-grid systems/self-sufficiency.

In terms of overall effects of off-grid living on social interactions of participants, the concept of intra-community stood out the most in our survey answers. Brown (2002:2-3) noted that: “Communities can be distinctly concrete or material when defined primarily by their location in space, their use of territory, and the actions and behaviors of their members...on the other hand, community is also a term used in the abstract to denote connection with others.”

The previously described Canadian off-grid study noted off-gridders hearken to a time when building homes required people to work together with their families and communities (Vannini and Taggart 2014:14-15). While most participants in this study did not manually build their own homes, all participants spoke of an unusually close neighborhood and heightened neighbor-to-neighbor cooperation—and most attributed it at least in part to their status of being off-grid and the ensuing interdependence. Participants not only saw their neighbors/neighborhood as good but often described their neighborhood as the “best” and the “closest” they had experienced which is an interesting contrast to the physical distance between these neighbors and the strong value these same participants also put on their off-grid “independence.” Bellah et al. (1986:150) noted one of the “classic polarities of American individualism...[a] deep desire for

autonomy and self-reliance combined with equally deep conviction that life has no meaning unless shared with others in the context of community.” Our participants supported the idea that perhaps more than any other way of living, being off-grid reminds us that “no one flies solo” (Vannini and Taggart 2014:5).

Our data suggest a need for further research on potential intra-community/social benefits related to off-grid living. Solar energy, in particular, deserves examination since it seemed to be a specific driving force for neighbor interactions. While some areas of life, when to do chores and energy usage, were curtailed by off-grid living, other significant areas were greatly expanded. These expanded areas included: getting to know neighbors, learning new skills, and empowerment stemming from a newfound sense of independence and pride in generating one’s own energy. This is no clarion call for large-scale off-grid living which, as several of our participants noted, is not for everyone due to inconveniences, start-up costs, and the skill level, flexibility, and time required. Indeed, Konisky and Ansolabehere (2014:9) stated that in the U.S. “We want energy at low economic cost (low price and little inconvenience) and with little social cost.”

But the off-grid experiences described to us do suggest that researchers should examine, on a larger scale, what benefits being off-grid in the United States might have on intra- and extra-community relations and neighborhood development and community enhancement as well as individual social identity. We heard from off-gridders who met newfound opportunities: they learned more about energy and sustainability, they connected/brainstormed with neighbors, they developed talents and social connections, and they gained pride in more independent control over energy, the very stuff that powered their lives. It would be interesting to see if these effects are also found in other off-grid situations in the U.S. since close-knit neighborhoods like the one described, and lifelong learning, like these neighbors experienced, can have distinct societal and

individual benefits.

Which ideas from off-grid living have potential social benefits that could be applied to or inform living on-grid? Consider the on-grid use of: whole house power monitors like those used off-grid that track/illustrate energy usage, solar water heaters -individual or shared- which can be an ‘introduction’ to renewable energy, community solar charging stations which can bring people (and their devices) together, neighborhood parks/schools/community centers using renewable energy in interactive/educational ways, community-based solar outdoor lighting (encouraging more interaction/time outside), more home- or neighborhood-based photovoltaic solar systems (with excess power sold back to the public utility grid), neighbor share programs (like tools, skills, renewable energy system set-up, etc...).

While these all already exist, it is in limited areas scattered across the United States. These and other energy choices, as well as enhanced energy literacy, display positive social benefits like the potential to strengthen neighbor interactions and perhaps strengthen communities as a whole. This suggests that when renewable/solar energy subsidies or tax breaks/incentives or clean energy policies are discussed (at national, regional and local levels), conversations should factor in more of the potential *social* benefits in addition to environmental and economic. This conversation about the social value and social impact of energy is crucial since the energy policies of individual states are often more influential on the solar energy market than the state’s amount of sunlight is (Sherwood 2014:19).

Off-grid living may also inform us in other ways related to how widespread solar and other forms of renewable energy are. Khalilpour and Vassello (2015) noted the sharp cost drop in solar systems has contributed to their global expansion (207). Residential solar photovoltaic systems have also recently seen growth in the United States. However, most U.S. solar installations remain utility and non-residential installations as opposed to residential

(Sherwood 2014). GTM Research/SEIA: U.S. Solar Market Insight® noted strong residential solar market growth in its 2015 Executive Summary, though much of that growth was attributable to growth in California (2014).

Residential installations, then, remain geographically concentrated in states with pro-renewable energy policies, and the growth in many states is slower than some renewable energy advocates had expected/hoped/predicted for solar a decade ago (Smil 2014). State incentives and obstacles clearly play a huge role. Pasqualetti (2011:202) suggested about renewable energy itself that perhaps additional “social barriers are blocking our way. That is to say, people are creating the problems, not technology.” Issues like aesthetics of solar panels or wind turbines, inconveniences of maintenance, and smell of energy sources, gender issues of time/chores, etc... may seem minor to some outside observers, industry/designers, policy makers, and solar proponents. However, according to Pasqualetti’s case studies from the US Scotland and Oaxaca (2011), and to our small group research, social challenges like these and others can be crucial for determining success or failure of renewable energy source acceptance in off-grid living or renewables use on-grid.

And, of course, environmental impacts cannot and should not be ignored. Most of our participants noted conservation as a byproduct of, rather than a reason for, their off-grid living. Conservation was a primary reason stated for choosing off-grid living only for a minority of our participants. Participants overwhelmingly felt they had ‘already been’ conservation-minded before off-grid living – it just enabled them more in being closer to/more aware of the energy sources, particularly solar-generated electricity. Vannini and Taggart noted that the more their off-grid participants became actively *involved* in heating their homes, the more they could be mindful of their environmental impacts (2013a:20). More knowledge about energy production and more hands-on closeness to it, as found by most of our participants, whether off-grid or on-grid, are likely to

have positive environmental ramifications in addition to the social.

Why is the the social so integral in the larger picture? Bakke (2013:xviii) explains that the grid isn’t just a technical creation, it is also highly cultural. Being off-grid is also cultural. We have seen from our small case study how living off-grid and being actively closer to the source of energy can affect the local neighborhood life, energy attitudes, and even individual identity.

At a larger level, further exploration of how a better/closer understanding of energy choices by energy users could contribute to reshaping whether and how we think about local community and energy itself in the environment and in our lives. Konisky and Ansolabehere (2014) noted, in their decade-long study of energy attitudes, the way that Americans’ concerns about specific local issues (e.g., pollution) stirred new interest/concern in energy itself. It may be that by re-examining our assumed status quo of living on-grid that we examine also our individual and community identities and interactions. Can we learn more about our energy connection and our human connection by considering/applying off-grid ideas, or by simply asking more questions about the grid itself and its place in our lives? Can we enhance communities by providing more incentives to learn about and get closer/more hands-on to our energy sources rather than approaching energy simply from economic or environmental perspectives, and from a distance?

Perhaps by getting more intimate with even our existing on-grid energy, individuals might experience some of the enhanced community sentiment and interaction found by off-gridders. Recognizing grid-based energy as a choice, for example, rather than a requirement, as it seems in some states with multiple zoning and/or legislative obstacles to off-grid living, might also engender change. Note the positive feelings of independence most of our participants displayed when they realized they *had* energy choices and gained what they saw as a degree of energy

control or freedom. This appeared to positively influence the way some felt about themselves, their households, and their neighbors/neighborhoods. Considering energy in tandem with the social life has the potential to increase energy literacy, knowledge about where energy comes from and how it is used, and foster more sustainable choices about energy. This could bring with it the ensuing potential for empowerment of individuals and community, whether entirely off-grid, partially off-grid, or on-grid with increased knowledge about and use of renewable energy sources.

Eileen Smith-Cavros, *Department of Conflict Resolution Studies, Nova Southeastern University*, eilesmit@nova.edu

Arianna Sunyak, *Fischler College of Education, Nova Southeastern University*, anssunyak@gmail.com

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REFERENCES CITED

AKELLA, A., R.P. SAINI, AND M.P. SHARMA.

- 2009 Social, economical and environmental impacts of renewable energy systems. *Renewable Energy* 34(2): 390-396. Retrieved on September 1, 2015, from http://greenenv.blog.com/files/2009/06/akella_2009_renewable-energy.pdf. <https://doi.org/10.1016/j.renene.2008.05.002>

BAKKE, G.

- 2016 *The grid: The fraying wires between Americans and our energy future*. New York: Bloomsbury.

BELL, K.

- 2016 *True stories of life off the grid*. CNN May 22. Retrieved on May 9, 2017 from: <http://www.cnn.com/2016/05/22/opinions/living-off-the-grid-us-aka-kamau-bell/>.

BELLAH, R., R. MADSEN, W. SULLIVAN, A. SWIDLER, AND S. TIPTON.

- 1986 (2008) *Habits of the heart: Individualism and community in American life*. New York, NY: Perennial Library.

BROWN, L.

- 2002 *Intentional community: An anthropological perspective*. Albany, NY: State University of New York Press.

CAMBRIDGE DICTIONARY

- 2015A Retrieved on September 1, 2015, from http://dictionary.cambridge.org/us/dictionary/english/off-the-gridseptember_3

CAMBRIDGE DICTIONARY

- 2015B Retrieved on September 3, 2015, from <http://dictionary.cambridge.org/us/dictionary/english/energy?a=american-english>

CHARMAZ, K.

- 2006 *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage.

- EATON, S.
2015 Solar mamas flip the switch on rural homes, gender roles. Public Radio International. June 5. Retrieved on August 25, 2016, from <http://www.pri.org/stories/2015-06-05/zanzibars-solar-mamas-flip-switch-rural-homes-gender-roles>
- ETZIONI, A.
1993 (as cited in Brown 2002) *The spirit of community: Rights, responsibilities, and the communitarian agenda*. Michigan: Crown Publishers.
- ETZIONE, A.
1995 (as cited in Brown 2002) *Rights and the common good: The communitarian perspective*. New York, NY: St. Martin's Press.
- EVERTSSON, M., AND M. NERMO.
2004 Dependence within families and the division of labor: Comparing Sweden and the United States. *Journal of Marriage and Family* 66(5): 1272-1286. <https://doi.org/10.1111/j.0022-2445.2004.00092.x>
- GEBREGIORGIS, G.
2015 Engendering energy in Ethiopia: The role of energy in improving rural women's socio-economic conditions in the Tigray region. *International Journal of Sociology and Anthropology*. 7(1), pp. 8-20. Retrieved on March 1, 2016, from DOI: 10.5897/IJSA2014.0550. <https://doi.org/10.5897/IJSA2014.0550>
- GTM RESEARCH/SEIA: U.S. SOLAR MARKET INSIGHT.®
2015 *Solar market insight report Q1*. Retrieved on September 16, 2015 from <http://www.seia.org/research-resources/solar-market-insight-report-2015-q1>
- KEMPTON, W., J. DARLEY, AND P. STERN.
1992 Psychological research for new energy problems. *American Psychologist*. 47(10): 1213-1223. <https://doi.org/10.1037/0003-066X.47.10.1213>
- KHALILOUP, R., AND A. VASSALLO.
2015 Leaving the grid: An ambition or a real choice? *Energy Policy* 82: 207-221. <https://doi.org/10.1016/j.enpol.2015.03.005>
- KHAN, H.J.
2001 "Battery operated lamps produced by rural women," in *Generating opportunities: Case studies on energy and women*. Edited by G.V. Karlsson, pp. 28-35. New York: United Nations Development Programme. Retrieved August 29, 2015, from http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/sustainable-energy/generating-opportunities-case-studies-on-energy-and-women/GeneratingOpportunities_2001.pdf

- KOCH, W.
2010 Could you live off-grid? More Americans are giving it a try. *USA Today*. August 9. Retrieved on May 9, 2017 from http://content.usatoday.com/communities/greenhouse/post/2010/08/americans-living-off-grid/1#.WRH_lFXyvIU
- KONISKY, D., AND S. ANSOLABEHRE.
2014 *Cheap and clean: How Americans think about energy in the age of global warming*. Boston, MA: MIT Press.
- MCLAUGHLIN, D., N. McDONALD, N. HA, AND J.M. PEARCE.
2010 Leveraging solar voltaic technology for sustainable development in Ontario's aboriginal communities. *Journal of Sustainable Development*. 3(3):3-13. <https://doi.org/10.5539/jsd.v3n3p3>
- MENSAH, S.
2001 United Nations Development Programme (UNDP). *Energy for rural women's enterprises: Ghana is generating opportunities: Case studies on energy and women*. New York, NY. Retrieved August 29, 2015, from http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/sustainable-energy/generating-opportunities-case-studies-on-energy-and-women/GeneratingOpportunities_2001.pdf
- NADAR, L., AND S. BECKERMAN.
1978 Energy as it relates to quality and style of life. *Annual Review of Energy* (3):1-28. <https://doi.org/10.1146/annurev.eg.03.110178.000245>
- NADAR, L., AND N. MILLERSON.
2010 "Dimensions of the 'people problem' in energy research and the factual basis of dispersed energy futures," in the *Energy Reader*. Edited by L. Nadar, pp. 88-104. Malden, MA: Blackwell Publishing, Ltd.
- NEILSEN, B.
2014 Imperatives and trade-offs for the humanitarian designer: Off-grid energy for humanitarian relief. *Journal of Sustainable Development*. 7(2). Retrieved May 3, 2016, from doi:10.5539/jsd.v7n2p15. <https://doi.org/10.5539/jsd.v7n2p15>
- NEWPORT, F.
2007 Wives still do laundry, men do housework. Gallup Social Series Lifestyle Poll. Retrieved January 2, 2016 from <http://www.gallup.com/poll/106249/wives-still-laundry-men-yard-work.aspx>
- PASQUALETTI, M.
2011 Social barriers to renewable energy landscapes. *Geographical Review*. 101(2): 201-223. April.
- ROSEN, N.
2010 *Off the grid: Inside the movement for more space, less government, and true independence in modern America*. New York: Penguin Books.
- SCHEIDT, K.
2013 Creating a community of homesteaders. *Communities*. 158:22-4. Spring.

- SHERWOOD, L.
- 2014 *U.S. solar market trends 2013*. Interstate Renewable Energy Council (IREC) Report. 2-29. Retrieved September 15, 2015 from <http://www.irecusa.org/annual-u-s-solar-market-trends-report/>
- SMIL, V.
- 2014 A global transition to renewable energy will take many decades. *Scientific American*. January. Retrieved March 14, 2017 from <https://www.scientificamerican.com/article/a-global-transition-to-renewable-energy-will-take-many-decades/>
- STAKE, R.
- 2003 "Case studies" in *Strategies of qualitative inquiry*. Edited by N. Denzin and Y. Lincoln, pp. 134-164. Thousand Oaks, CA : Sage Publications.
- STONER, S.
- 2013 Going for the grid: A community ditches energy independence to get greener. *Communities*. 161:26-29; 75. Winter
- TAINTER, J.
- 2011 Energy, complexity, and sustainability: a historical perspective. *Environmental Innovations and Societal Transitions*. 1 (1): pp 89-95. Retrieved January 4 2017 from <http://doi.org/10.1016/j.eist.2010.12.001>
- TAINTER, J.A., AND T.G. TAYLOR.
- 2014 Complexity, problem-solving, sustainability, and resilience. *Building Research and Information* 42(2):168-181.
- UNITED STATES CENSUS.
- 2014 Retrieved September 2, 2015 from <http://quickfacts.census.gov/qfd/states/49/4911320.html>
- THE UNITED STATES ENERGY INFORMATION ADMINISTRATION.
- 2015 Report. *Short term energy outlook*. Retrieved September 11, 2015 from http://www.eia.gov/forecasts/steo/report/renew_co2.cfm
- VANNINI, P., AND J. TAGGART.
- 2013a Making sense of domestic warmth: Affect, involvement, and thermoception in off-grid homes. *Body and Society* 20(1) 61-84. Retrieved June 2018 from doi: 10.1177/1357034X13499381. <https://doi.org/10.1177/1357034X13499381>
- VANNINI, P., AND J. TAGGART.
- 2013b Voluntary simplicity, involuntary complexities, and the pull of remove: The radical ruralities of off-grid lifestyles. *Environment and Planning* 45: 295 – 311. Retrieved March 2017 from doi:10.1068/a4564. <https://doi.org/10.1068/a4564>
- VANNINI, P., AND J. TAGGART.
- 2014 Do-it-yourself or do-it-with? The regenerative life skills of off-grid home builders. *Cultural Geographies* 21(2): 267–285. Retrieved March 2017 from doi: 10.1177/1474474013493577. <https://doi.org/10.1177/1474474013493577>
- VANNINI P., AND J. TAGGART.
- 2015 *Off the grid: Reassembling domestic life*. Routledge: New York.

WHITE, L.

1959 *The Evolution of Culture: The Development
 of Civilization to the Fall of Rome.* New
 York: McGraw-Hill.

APPENDIX A

Television shows associated with off-grid living:

A1. Living with Ed. Accessed at: <http://www.livingwithed.net/thepress.asp>

A2. TLC “Risking it All.” Accessed at: <http://www.thewrap.com/tlc-goes-off-the-grid-with-3-families-on-new-series-risking-it-all-exclusive/>

A3. National Geographic Channel, “Livin’ Off the Grid” Accessed at: <http://channel.nationalgeographic.com/apocalypse-101/videos/livin-off-the-grid/>