



## **Self-Sufficient Off-Grid Farm Houses PRIVATE OFFERING SUMMARY**

FARMSCAPE HOMES LLC. Is a Minority Owned engineering and design service for Self-Sufficient Off-Grid Farm Houses. The houses are usually built on two-acre plots each having a one-acre food plot and solar power with prime power propane back up. All six models are designed to be *disaster resistant* meeting the needs of homes designed to resist the more severe and more frequent weather effects caused by global warming. The Company is planning a Phase 1, 10-30-home Self-Sufficient Home Subdivision in the Dallas, TX area.



### **THE MARKET -REAL ESTATE THREATS FOR 2023**

#### **Global Warming and Increased Home Damages**

The big real estate firms are pouring significant resources into calculating climate risk and its likely effect on property portfolios. “This process will be painful for investors who are caught off guard, but those who are prepared have the potential to outperform”. Damage to U.S. real estate from extreme storms hit a record high in 2017. Natural disasters, including floods, mudslides, tornadoes, high winds, excessive rains, earthquakes, foundation failures from expansive soils, and wildfires, cost more than \$300 billion in damage, with most of the damage to residential and commercial real estate. Engineering for new homes has still not been adjusted to account for these new and well proven risks to conventional homes. The current home designs are still using engineering standards from fifty years ago.<sup>1</sup>

## **Global Warming and Excessive Rains**

In 2018, from May through July, much of the East Coast, down to Florida, saw rainfall up to three times normal levels, according to the National Oceanic and Atmospheric Administration (NOAA) undermining many house foundations. Nine of the top 10 years for one-day extreme precipitation events have occurred since 1990, according to the Environmental Protection Agency (EPA), because as the atmosphere warms, clouds hold more water. All of these statistics are not just alarming, they are sounding the alarm bells for the real estate investment sector, because it is most vulnerable. Real estate investment companies are now prioritizing the risk of climate change and creating new approaches to better gauge and develop mitigation strategies such as new engineering designs for homes and commercial buildings that can withstand earthquakes, higher winds, excessive rains, better foundations, brownouts and blackouts caused by the increase in weather patterns from global warming. Smart investors see climate considerations as a necessary layer of fiduciary responsibility to their stakeholders, as well as an opportunity to identify markets and assets that will benefit from a changing climate, it also highlights the potential return on investment from putting resources into mitigation strategies for real estate assets such as new engineering designs for homes and commercial structures.

Heitman, a Chicago-based real estate investment firm with nearly \$34 billion in assets under management globally, worked with the Urban Land Institute on a weather threat report and is putting heavy resources, both financial and personnel, into measuring and balancing climate risk and how damages can be mitigated by new engineering designs in buildings. When Heitman began reviewing how to mitigate home damages they first looked to insurance companies that specialize in home insurance. They have the data showing the increase in home claims from more severe weather patterns and a lack of new home engineering designs to address these new threats. Insurance companies are set to assess damages based on the threats for the past years. Insurance companies are not designed to forecast what could happen in the next 10 years.<sup>2</sup>

## **Global Warming and Natural Gas**

Some cities, such as San Francisco, are banning underground natural gas piping to homes because of the inherent fire threat during even a mild earthquake from ruptured pipes underground. Homes using natural gas lines connected to a central facility through miles of underground pipes.<sup>3</sup> Small 500 and 1000-gallon underground propane tanks that can be located directly on the property and have very short and flexible lines do not have this problem. The resulting trend is that the new homes will have electric stoves and furnaces placing a greater demand on the power grid, making homes more vulnerable to brown out and black-outs caused by high winds, tornadoes, hurricanes, and earthquakes.<sup>4</sup>

## **Climate Change Affecting the Housing Market**

Between 2007 and 2017, average home prices in areas facing the lowest risk of flooding, hurricanes and wildfires have far outpaced those with the greatest risk, according to figures

compiled for Bloomberg News by Attom Data Solutions, a curator of national property data. Homes in areas most exposed to flood and hurricane risk were worth less last year, on average, than a decade earlier. Attom Data looked at the annual change in home prices and sales across 3,397 cities around the country, then divided those cities into five groups based on their exposure to various types of natural disasters. What they found suggests the threats of climate change are beginning to register. On average, home prices across the cities analyzed by Attom Data increased 7.3 percent between 2007 and 2017. That figure masks deep drops in vulnerable areas. While the natural disaster risk is not the only factor consumers are considering when buying a home, it has become a significant factor.<sup>5</sup> As Americans live through storms, floods, tornadoes, hurricanes, and black-outs, which is now receiving more news coverage, the market awareness for better built homes is growing.<sup>6</sup>

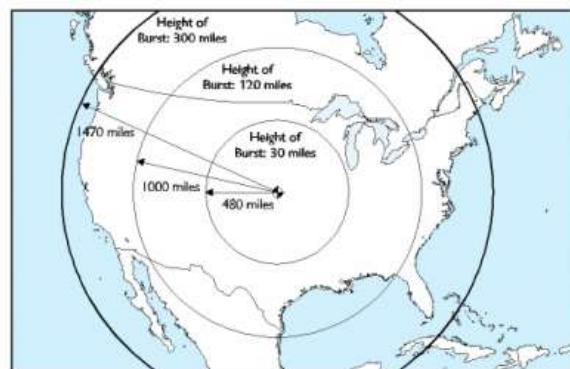
### 2020 US Power Grid Cyber Wars

A cyberattack on the US Power Grid might be a punitive response to a US action in other parts of the world. The United States power grid has been considered a major target for many years by enemies such as Iran, North Korea, China, and Russia. The complex US Power Grid is composed of 3,300 utilities that deliver power through 200,000 miles of high-voltage transmission lines, and 55,000 substations all working together to deliver power to millions of people in homes and businesses.<sup>7</sup> In 2015 a Russian hacker disrupted the power grid in Ukraine proving that it is possible to disrupt the power grid even without government resources.<sup>8</sup> In March of 2019, a cyberattack was made on the power grid in Western United States.<sup>9</sup> In June 2019, US Government increased its cyberattacks on the Russian Power Grid.<sup>10</sup> This trend of targeting power grids is expected to continue and expand. While this is not a mainstream concern, neither was Covid-19. The FARMSCAPE customer is fully aware of this threat.



### High Altitude Electromagnetic Pulse (HEMP)

A High Altitude Electromagnetic Pulse or HEMP is produced when a nuclear weapon is detonated high above the Earth’s surface, creating gamma-radiation that interacts with the atmosphere to create an instantaneous intense electromagnetic energy field that is harmless to people as it radiates outward, but which can overload computer circuitry with effects similar to, but causing more damage much more swiftly than a lightning strike.<sup>11</sup> The effects of HEMP became fully known to the United States in 1962 during a high-altitude nuclear test (code named “Starfish Prime”) over the Pacific Ocean, when radio



**Area Affected by an Electromagnetic Pulse, by Height of Burst**

Source: Gary Smith, “Electromagnetic Pulse Threats,” testimony before the House National Security Committee, July 16, 1997.

stations and electronic equipment were disrupted 800 miles away through parts of Hawaii. The HEMP effect can span thousands of miles, depending on the altitude and the design and power of the nuclear burst. A single nuclear device detonated at an appropriate altitude over Kansas could affect all of the continental United States<sup>12</sup>, and can be picked up by metallic conductors such as wires or power lines along roads. All these wires act like antennas to capture and conduct the energy shockwave into the electronic systems of anything connected to the grid. This would not only destroy all the commercial power stations in the United States, but also anything connected to the grid like our homes where electronics control furnaces, air conditioners, washers, dryers, well pumps, televisions, radios etc. With hate for America growing in the middle east especially after US evacuating Afghanistan, the chances of a terrorist group purchasing a long-range missile armed with a small nuclear warhead from North Korea is growing.

## **THE FARMSCAPE SOLUTION**

The FARMSCAPE solution is to avoid building houses like those built in the 1950's which is still the standard by which most homes are built today. What makes FARMSCAPE homes different?

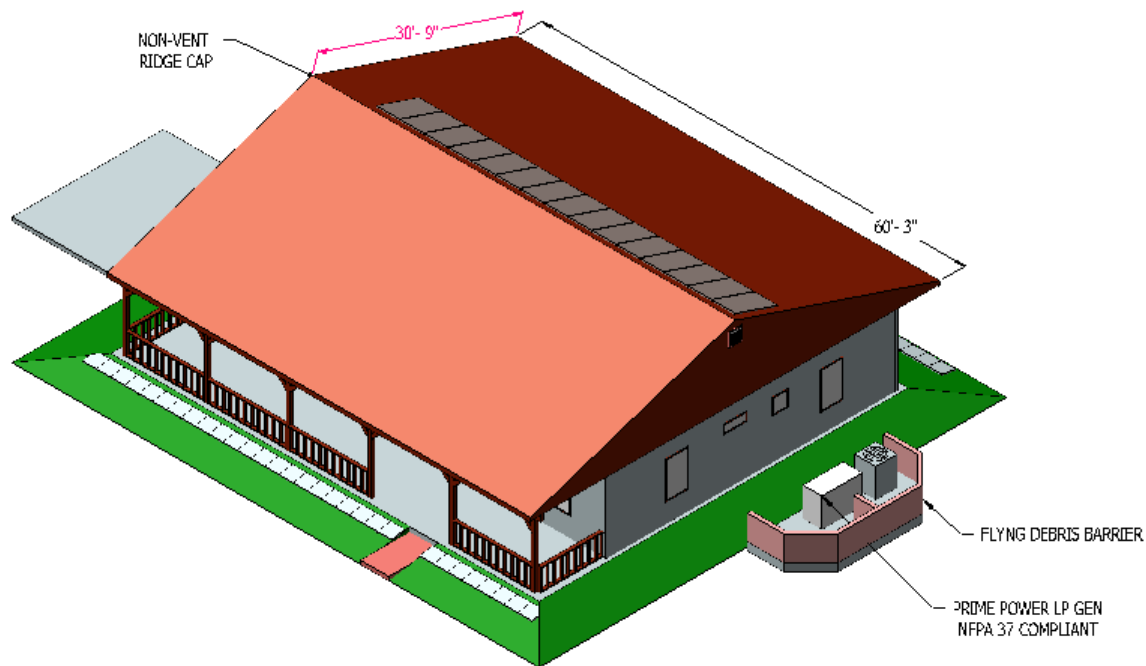
1. **OFF-GRID-PEASE-TIME AND DURING NATURAL DISASTERS.** Farmscape Homes are powered by solar panels, a Lithium Ion battery bank, and a 22 KW slow speed prime-power water cooled propane generator. The generator operates 0-6 hours per day from an underground propane tank with a one-year approximate duration. This also makes the house "*EMP safe*" from EMI and EMP direct damage which occurs with appliances operating on the grid. Solar panels, inverters, and prime-power generators are still vulnerable to overhead EMP damage. Propane powered prime power generators do not use electronic fuel injection and are much less vulnerable to overhead EMP.
2. **OFF-GRID POST EMP EVENT.** If the solar panels, inverter, solar charge controller and prime power generator are damaged from an EMP event, the back-up generator can be used. A 6000-watt remote-start dual-fuel gas/propane portable generator and back-up inverter are stored in an EMP shielded enclosure meeting the shielding requirements of Mil-188-125. MIL-STD-188-125, MILITARY STANDARD: HIGH-ALTITUDE ELECTROMAGNETIC PULSE (HEMP) PROTECTION FOR GROUND-BASED C4I FACILITIES PERFORMING CRITICAL, TIME-URGENT MISSIONS FOR COMMON LONG-HAUL/TACTICAL COMMUNICATIONS SYSTEMS. This standard establishes minimum EMP shielding requirements and design objectives for high-altitude electromagnetic pulse (HEMP) hardening of fixed and transportable ground-based facilities which perform critical, time-urgent command, control, communications, computer, and intelligence (C4I) functions. This 6000-watt generator operates approximately 4 hours per day to maintain all the conventional home appliances except the air conditioner. The generator is easily connected to the house and stationed on the front covered porch where it can be plugged into the porch

- exterior wall electrical plug connected to the house main electrical panel and also plugged into the propane gas outlet on the porch exterior wall connected to the underground propane tank. The underground 1000-gallon propane tank is able to supply power to the house for approximately one-year. Farmscape homes have no electrical bills and no water bills; just a propane bill every quarter.
3. **FOOD PANTRY** - Farmscape homes are designed with a Short-Term and a Long-Term food pantry able to store 3000 to 6000 lbs. of dry foods plus shelving for more conventional foods. This is usually enough food to feed eight people for two years.
  4. **THERMALLY EFFICIENT**- Farmscape homes are extremely thermally efficient with fire proof wall and ceiling insulation plus an insulated roof.
  5. **ROOFING**- Farmscape homes do not use asphalt shingles but instead use rubber hail resistant and metal UV roof panels.
  6. **CLEAN-ROOF**- Farmscape roofs have no roof penetrations from septic vents, attic vents, or furnace vents. All vents are terminated in the gable end wall and meet current building codes. There are no pipes, vents, or chimneys in the roof subject to hail damage or subject to roof leaks.
  7. **FOUNDATION**- Farmscape homes are designed with a foundation to last 100 years using fiberglass re-bar and a waffle slab that is not subject to the damaging effects expansive soils like conventional foundations.
  8. **BRICK EXTERIOR**. Farmscape homes have 2 X 8 exterior walls and covered with mortarless self-ventilating concrete brick adding almost 100,000 pounds of vented mass. This type of construction does not have weep holes required with conventional brick walls which form an entry point into the house for, termites, mice and insects. Farmscape Homes can also use R-Panel metal siding which comes in various colors with high reflectivity.
  9. **EMPTY ATTIC**-Farmscape homes do not have, plumbing, wiring, or HVAC ducting in the attic. All air ducting is below the insulated ceiling and exposed and the HVAC unit is in a utility room where the air filters can be changed without using a ladder to enter the attic. Over 485,000 home owners each year get injured using ladders.<sup>13</sup> Also, the attic trusses have a walkway to service the solar panel wiring in the attic and a window to provide natural light to the attic.
  10. **FULLY SHADED SOUTH WINDOWS**-Farmscape homes are designed with roof overhangs to fully shade all windows facing South reducing the cooling load.
  11. **NO UGLY GUTTERS AND DOWN SPOUTS**- Farmscape homes distribute roof rainwater evenly eight feet away from the foundation without gutters. There are no gutters to clog or rot the fascia boards they are attached to. Gutters are optional if rainwater harvesting is desired with an 1800 gallon underground tank.
  12. **FOOD GROW PLOTS**- Farmscape homes have at least a one-acre food plot allowing the home owner to grow all the food required for one year using the customer's small farm tractor.
  13. **WIND RESISTANCE**-Farmscape homes are designed for 130 mph winds in open areas not shielded by terrain or nearby buildings.
  14. **TERMITE TRAPS**- Farmscape homes have poison-free termite traps ten feet on-center around the house which needs to be checked every three months.

15. **INTERNAL PLUMBING-** Farmscape homes have all plumbing lines in the walls and none in the attic subject to freezing. Frozen attic pipes were suffered by over 500,000 Texas homeowners in the winter of 2021 when an electrical blackout occurred which lasted for weeks during freezing temperatures which froze the plumbing lines in the attics stopping the water supply to the house for fresh drinking water and toilet flushing. More damage resulted when the pipes thawed and the homeowners were forced to wait for months for the plumbers to repair the plumbing lines and longer to repair the sheet rock in the ceilings and replace the water damaged furniture and flooring.



The FARMSCAPE Homeowner can depend on their real estate value being stable and not being negatively affected like conventional homes.



**THE FARMSCAPE HOME PROVIDES OFF-GRID SUSTAINABILITY FOR THE FOLLOWING:**

- Well pump for fresh water for *d*rinking and irrigation
- Septic system
- House lights
- Refrigerator and other appliances
- HVAC
- Communications – radio/TV/internet
- Hot Water
- Cooking
- Food pantry storing food for eight people for 2 years.
- Water filtration Compliant NSF 42 and NSF 53

**FARMSCAPE Small Scale Farming Plots** provides a grow plot large enough to feed a family for one year on one harvest per year. The FARMSCAPE Self-Sufficient Home represents a real estate niche in the future in homes for smart people who are concerned about expansive soils, power outages, hurricanes, tornadoes, earthquakes, cyberattacks on the US power grid, long-term pandemic isolation, and want a true “Maintenance Free Off-Grid home” with a farm plot.

The FARMSCAPE Homes are approximately 15% more expensive than conventional homes with many advantages. It is not aimed at the conventional suburban home buyer but a progressive utilitarian type of buyer that wants to be less dependent on the US infrastructure and more aware of proven weather effects of global warming and possible cyber warfare from other countries. The “alternative energy” and Self-Sufficient market is usually interested in survival or hobby farming which is part of the customer profile for this market.

### **COVENANTS**

The FARMSCAPE Community will allow only FARMSCAPE self-sufficient single-story homes. Horses, goats, dogs, cats, lamas are allowed but swine is not allowed. The number of animals will be limited by formula based on the size of the homesite. Covenants will cover outside storage of, boats, RV’s, trailers, equipment, etc. All homes require 100% prime power back-up by underground propane tanks.

### **FENCING**

Each 1-3-acre plot will be fenced with galvanized field fence wire 4-ft high with 2 inches x 4 inches openings to protect crops grown by each home-owner from rodents and keep domesticated animals contained. All fence posts will be pressure treated wood and driven into the ground on 10-ft centers. Driveways will have a motorized 16-ft. galvanized fence gate. It will be the responsibility of the homeowner to maintain their fence. No solid fencing will be allowed.

### **BUILDING TYPES ALLOWED**

Only certain types of western style single story buildings will be allowed in the subdivision and will be reviewed and approved by the FARMSCAPE Building Review Board. This will protect the real estate value of all homes in the community.

### **HOME OWNER’S ASSOCIATION**

The HOA for this community will enforce and revise standards of the community to protect property values.

### **CUSTOMER PROFILE**

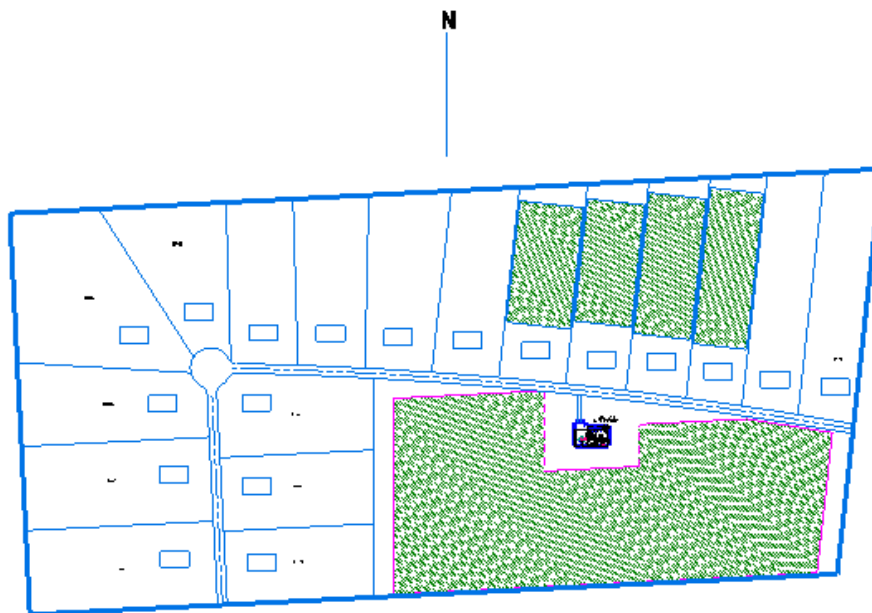
After talking to many people and real estate agents in Texas, the customer profile for this type of home and community is believed to be a person who wants:

1. A home that can operate long-term Off-Grid.
2. A simple self-sufficient house with strong western appeal
3. A home that will allow hobby or survival farming on the home property
4. A home that has dedicated long-term food storage designed into the floor plan.
5. A home with a mechanical room for solar equipment
6. A house that can withstand earthquakes, expansive soils, and high winds.
7. A home that is energy efficient and independent
8. A home that is maintenance free
9. A home that can be self-sufficient among neighbors who share the same attitude.
10. A home size of 1,200 ft<sup>2</sup> to 3,000 ft<sup>2</sup>



## THEORETICAL PLAT

A theoretical 45-acre plat, shown below, shows an example of how the solar homes would be located to form a self-sufficient community. The model home is shown on an 11-acre plot with a 10-acre grow plot. The other homes are shown on 1.5 to 3-acre plots with 1-acre food plots. Note that this self-sufficient subdivision does not require city water, city sewer, or city power so creating a subdivision is relatively cheap, easy, and fast. The only city service that may be required would be weekly garbage service.



## SOLAR HOME PERCEPTION

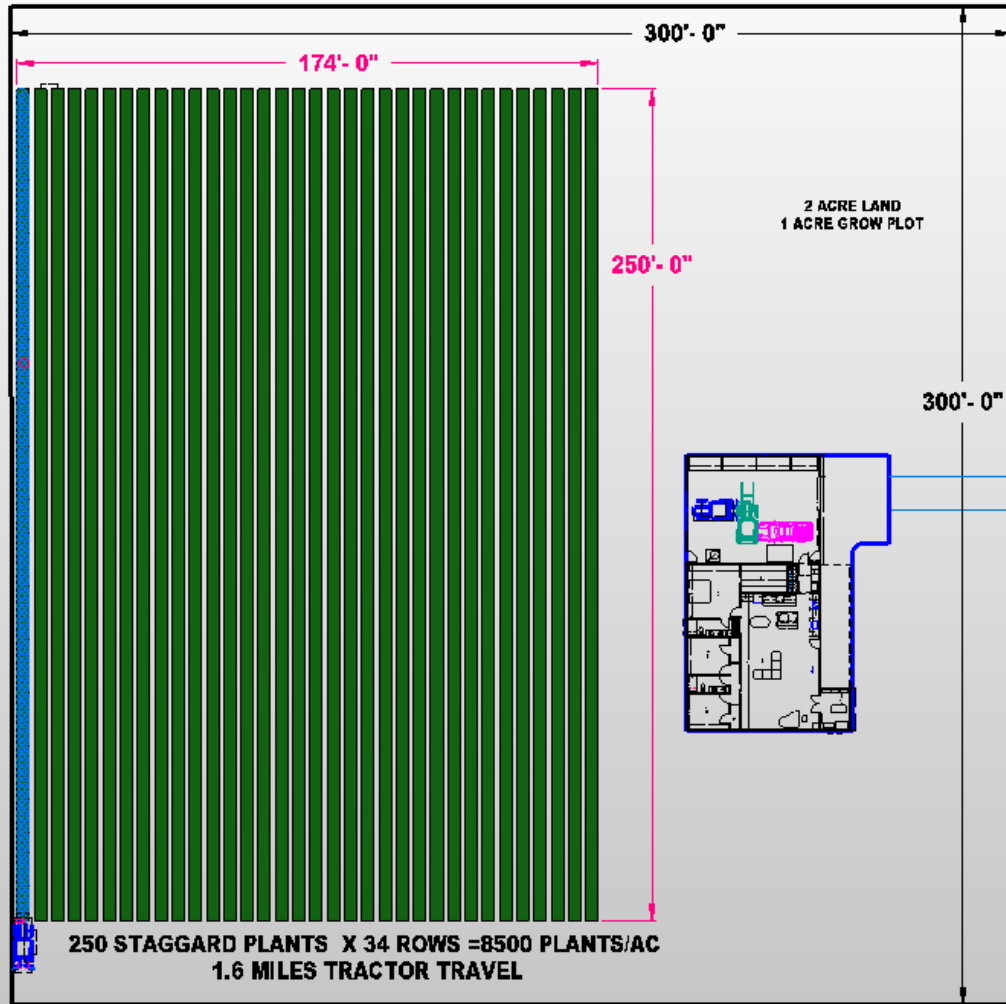
The solar home and off-grid home industries have a perception problem. The perception of the layperson is that solar houses and/or Off-Grid houses are made of 55-gallon drums, sand bags, rammed earth, milk cartons, and shipping containers. Often solar panels are mounted on a post in some part of the yard which many people find visually objectionable. Often this pole mount solar array method is used so the panels can track the sun which increases the efficiency of the solar array by approximately 20%. The FARMSCAPE approach is to add 20% more solar panels on a fixed roof which eliminates the solar array on a post in the yard. The solar panels are mounted on the house roof that is specifically designed with a roof pitch close to the local latitude and the house is oriented to true South. The solar panels are positioned on the roof so there is a walkway on the low end of the solar panels so it is easy and safe to walk around and service the solar panels. This also places the panels away and protected from flying debris from a lawnmower and makes it difficult to steal the solar panels.

## FARMSCAPE HOUSE

The FARMSCAPE Self-Sufficient Homes will portray a farm house concept with a different interior “décor” than conventional homes which will coincide with the “farm house” designs. Three example photos are shown below which appeals to the customer profile.





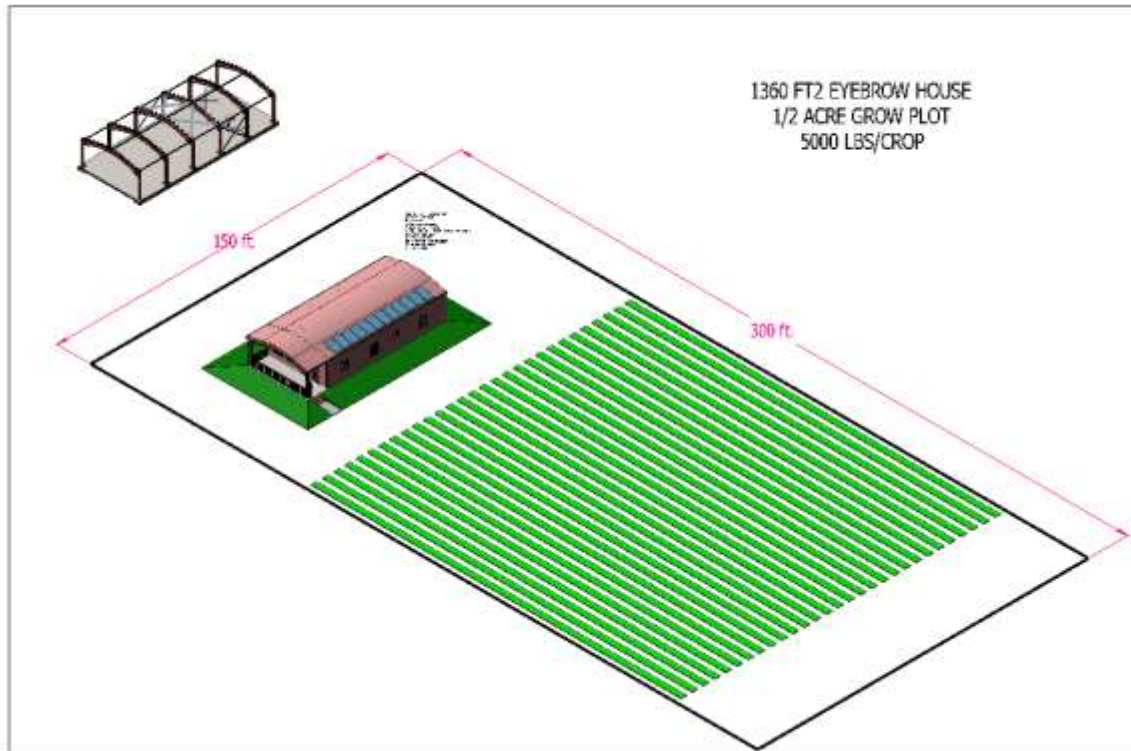


### HOME FOOD PLOT

Each two-acre plot can support a 1-acre food plot capable of producing approximately 10,000 lbs. of food in one season.<sup>14</sup> This would be able to feed 8 people for one year.

#### 34 – 250 ft double rows- Sample Crop

90 lbs.	Barley
80 lbs.	Navy Bean
900 lbs.	Carrots
950 lbs.	Onions
2000 lbs.	Potatoes
1120 lbs.	Wheat
670 lbs.	Cabbage
400 lbs.	Peas
2500 lbs.	Tomatoes
80 lbs.	Lima Bean
50 lbs.	Pinto bean
400 lbs.	Corn
400 lbs.	Bell Pepper
440 lbs.	Cantaloupe



### **STARTER HOUSE ON 1 ACRE**

There is also a market for self-sufficient homes small two bedroom homes of perhaps 1000 to 1500 ft<sup>2</sup>. This size house would be placed on a one-acre or two acre plot.

### **FARMING SKILLS**

Many people want to grow their own food but only have the skills to grow food in a few flower pots and no real farming experience using a small farm tractor. FARMSCAPE will consider “farm consulting services” with or without a fee. Each homeowner is expected to get their own small tractor. Some people may want to have a smaller food plot that can be managed by hand tools. This is up to the homeowner. However, it will be made clear that human power farming expends more calories than the crops they are growing can provide but some people enjoy manual farming and are not bothered by this or the hard labor, sun, heat, bugs, bees, dust or mud.

### **COMPETITION**

There are currently no builders or developments with the “Off-Grid Self-Sufficient Farming” concept. There are some tiny homes and containers homes, and none have a realistic possibility of being truly able to meet all needs for growing ALL of their own food and being self-sufficient. Perhaps the reason for no one else having the FARMSCAPE concept is that the person or people with the necessary skills and vision was not able to be brought together. The new “Net-Zero” concept currently promoted for many new homes is based on an energy efficient house but is not off-grid or self-sufficient.

# REQUESTING A PRIVATE OFFERING MEMORANDUM

Qualified investors must request a Non-Disclosure Agreement before receiving the Private Offering.

## END NOTES

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<sup>1</sup> Diana Olick CNBC April 8, 2019, Erica Posse, Lisa Rizzolo

<sup>2</sup> David Maurstad, FEMA's deputy associate administrator for federal insurance and mitigation and chief executive of the National Flood Insurance Program.

<sup>3</sup> Elizabeth Weise USA Today, Nov 10, 2019

<sup>4</sup> Elizabeth Weise USA Today, Nov 10, 2019

<sup>5</sup> By Christopher Flavelle and Allison McCartney, June 18, 2018, Bloomberg analysis of data from ATTOM Data Solutions.

<sup>6</sup> Jesse Keenan, Harvard University, focuses on the interaction between climate change and the housing market.

<sup>7</sup> A Cyber Attack on the US Power Grid, Council on Foreign Relations, Robert K Knake, 2017.

<sup>8</sup> A Cyber Attack on the US Power Grid, Council on Foreign Relations, Robert K Knake, 2017.

<sup>9</sup> The North American Electric Reliability Corporation (NERC) Oct 2019 report, Bruce Sussman

<sup>10</sup> New York Times, David Sanger and Nicole Perlroth, June 15, 2019.

<sup>11</sup> A nuclear explosion produces gamma rays, which interact with air molecules in a process called the Compton effect. Electrons are scattered at high energies, which ionizes the atmosphere, generating a powerful electrical field. This EMP effect is strongest at altitudes above 30,000m, and lasts so briefly that current cannot start flowing through a human body to cause harm to people. <http://www.physics.northwestern.edu/classes>

<sup>12</sup> The Federation of American scientists, "Nuclear Weapons EMP Effects," [<http://www.fas.org/nuke/intro/nuke/emp.htm>]

<sup>13</sup> Industrial Safety and Hygiene News (ISHN), July 6, 2017.

<sup>14</sup> Averaged from numerous USDA and University sources 8 to 12 inch in row centers and adjusted for 30 in row centers.

