



CONFIDENTIAL

# Solectrac, Inc.

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Climate-Smart Electric Tractors

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## Executive Summary

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Steve Heckerath  
[steve@solectrac.com](mailto:steve@solectrac.com)  
(707) 937-3385  
30151 Navarro Ridge Road  
Albion, CA 94510 USA  
[www.solectrac.com](http://www.solectrac.com)

# Solectrac Executive Summary

## Introduction

Solectrac is an early-stage company positioned to become a leading manufacturer of electric tractors. We intend to achieve annual revenue of \$29 million with annual profits of \$3 million in 5 years. The small to mid-size tractor market is \$120 billion world-wide. Electric tractors are expected to follow the trend of passenger electric vehicles (EVs) with about a 5 year lag, so now is the time to establish a market position. With our proprietary technologies and first-to-market advantages, Solectrac is well positioned for the transition as electric tractors follow the technology adoption curve from innovators to early-adopters to early-majority. We are seeking \$2.5 million in this first round of equity funding. Come join us for the ride!

## Opportunity

The agricultural sector is the source of about 8% of all human-caused greenhouse gas (GHG) emissions and is a major contributor to climate change. Hearing loss and respiratory illness are common among farm workers and other operators of diesel tractors. Today, noisy polluting diesel engines power most farm equipment needed for planting, cultivation and harvesting, as well as utility machinery in other sectors. There has not been a viable alternative to diesel tractors, until now.

## Solution

Solectrac's all-electric agriculture and utility tractors can be powered by renewable energy or by the conventional electricity grid. Our electric tractors help agricultural and utility operations reduce their carbon footprint, reduce the harm to soil and human health caused by diesel engine use, and support regenerative agriculture and carbon sequestration initiatives. In addition, Solectrac's electric tractors are well suited to any work that requires quiet operation of machinery, such as grounds-keeping, golf courses and utility work in municipalities.

Electric tractors have a number of inherent advantages over diesel tractors. Besides being zero emissions, they also are quiet, higher efficiency, have significantly fewer moving parts and therefore lower maintenance, and utilize battery weight for ballast where diesel tractors add steel weights. Furthermore, electric motors have maximum torque at zero

RPMs which is ideal for tractors. Solectrac is ready to replace diesel tractors in the 40-horsepower(HP)and-under market segment.

Solectrac intends to offer three electric tractor models. These will be released sequentially to the market. Each model adds more proprietary technology, generates higher margins, and is a springboard for the next model, providing cash flow, establishing the Solectrac brand, and developing our sales channels. The models, in order of anticipated introduction, are shown below.



**Famtrac Compact Electric Tractor (CET).** A 4WD versatile 30-HP-equivalent compact electric tractor, which will meet the needs of most small farms with some challenging terrain, as well as general utility operation. The CET was developed by, and is currently being manufactured in India, by Escorts Ltd. Solectrac gave key inputs into the design and will be the exclusive distributor in California starting in early 2020. We intend to expand this territory as sales progress.

**eUtility.** A 2WD 40-HP-equivalent tractor, ideally suited for vineyards, equestrian arenas, commercial greenhouses, hobby farms, livestock operations and general utility operation. The eUtility was developed by Solectrac. A number of prototypes have been built by Solectrac using major components from Escorts. These prototypes have been purchased by eager early-adopter customers. A 4WD 70-HP version is also in development.

**eFarmer.** A unique 2WD 30-HP-equivalent tractor for row crops. The entire tractor is being designed by Solectrac in conjunction with our Indian partner, Adroit Group. The eFarmer incorporates patented proprietary technologies that will revolutionize row crop farming for small farms with its unique forward visibility and front, mid, and rear hitches. A number of prototypes have been built and tested to date. The eFarmer is specially designed to minimize shipping costs, expanding our channel reach.

Solectrac also intends to offer a solar charging trailer. A farmer simply pulls the solar trailer with the tractor out to the field where it can charge axillary battery packs which can be quickly exchanged using any of the three hitches to supplement the 3 – 8 hour run time of the on-board pack and allow continuous operation. The combination of the solar trailer and the eFarmer can operate independently anywhere in the world without the need for a polluting fuel supply chain. With the addition of an inverter the eFarmer can be a mobile power source when it is not working the fields, powering homes, schools, clinics, community centers, etc. on a regular basis or whenever the need arises.

## Market

### Market Size

The market for 40-HP-and-under tractors is \$9 Billion in North America and over \$120 Billion worldwide. In 2019, it was forecast that over 160,000 tractors will be purchased in this size range in North America alone. The latest research indicates that the market for small (40-HP and under) tractors is increasing, while the market for larger tractors is on the decline.

As in the transportation sector, the agricultural sector is being asked to address both pollution and greenhouse gas (GHG) emissions. Solectrac receives inquiries from individuals, large companies, NGOs, and government institutions from all over the world. These potential customers express the rising concern of agriculture's dependence on fossil fuel and see the renewably charged electric tractor as a sustainable alternative.

The upfront cost of an electric tractor is higher than that of an equivalent diesel tractor. This is the biggest challenge facing mass adoption. The total cost of ownership of an electric tractor, however, is significantly less than that of a diesel tractor. For this reason, we think offering financing could accelerate adoption, and so we intend to pursue this with our banking partner.

We have seen early interest from small organic farmers and vineyards. Both tend to be progressive in their pursuit of regenerative farming techniques. Both market segments also tend to command higher margins than traditional factory farming and are able to afford the (currently) higher capital expense of an electric tractor compared to diesel.

Solectrac is working with the California Air Resources Board (CARB) to get electric tractors approved for CARB's low-emissions subsidized tractor program which pays up to 80% of the cost to replace old diesel tractors. This would be a significant boost to Solectrac's plans.

We see a large market opportunity in developing countries for the eFarmer especially when it is paired with solar charging. This is because in developing countries diesel fuel is expensive and farms may be remote. Furthermore, it is easier for a farmer to perform his own maintenance on an electric tractor compared to a diesel tractor because there are far fewer moving parts.

## Competition

Worldwide, there are four companies that have introduced all-electric tractors, but none are in direct competition with Solectrac's 40-HP-and-under agricultural tractors. In other market segments, John Deere introduced a 402-HP electric tractor prototype in December 2016. Their design was for large, industrial farms and is still not in production.

Another competitive element exists with three U.S. companies that have new diesel versions of mid-hitch cultivating tractors in various stages of development. These Category 0 diesel alternatives may impact Solectrac's market share in the near term; however, they do not address the need to reduce GHG emissions and pollution. The primary market for mid-hitch tractors are small organic farmers, who are also the most likely to prefer an all-electric tractor.

## Why Us?

Solectrac is the first company to develop and sell zero-emission production prototypes in North America and has one utility patent and several others pending. that will increase the efficiency and run time of electric tractors. Solectrac has been recognized as an innovator in the United States, Canada, India, and beyond and has a positive track record for media exposure and name recognition.

Solectrac is led by Stephen Heckerth, who has been designing and building electric vehicles since 1992. He realized that while battery weight is a problem for most electric vehicles, it is an asset for tractors that require weight for traction. Heckerth also recognized that the maximum torque at low RPM generated by electric motors was a huge advantage for tractors that generally operate at slow speeds. He was responsible for many early innovations that increased the operating time to make electric tractors commercially viable:

First electric full function agricultural tractor 1992; Electric tractor with mobile AC power 1993; Electric motor on agricultural implement 1993; First full function agricultural electric tractor

commissioned by major tractor manufacture 1995; Electric tractor with wheel motors 1996; First tractor with separate electric PTO motor 1996, First tractor to use electric linear actuators on three point hitch 1996; First electric tractor with exchangeable battery pack 1996; First electric tractor with solar shade canopy 1996; First remote control electric tractor 1997; First electric metal track crawler 2007; First electric rubber track crawler 2008; Patent on exchangeable battery packs 2010; Patent pending on floating, parallel acting three point hitch mechanism for use with linear actuators 2018; Patent pending on electric tractor with front ,mid and rear three point hitch 2018 and Patent pending on use of electric linear actuator as top link.

Our management and advisory teams have experience in agriculture, manufacturing, customer advocacy, sustainability and business management. Solectrac is uniquely positioned to successfully capture significant market share for 40-HP-and-under electric tractors in North America and beyond.

Solectrac is a Certified B Corp and California benefit corporation to ensure that our mission stays intact as we grow.

## **Marketing Plan**

Solectrac will begin North American sales of the CET in early 2020 with an initial focus on California. We plan to open a showroom located on the Highway 101 corridor in Santa Rosa, CA with central access to the vineyard market. Solectrac intends to build a dealer network in other parts of California and North America, targeting 50 dealerships by the end of 2022. In addition to the showroom and dealers, Solectrac will continue doing field demonstrations, which have proven to be an effective sales tool--sometimes electric tractors just seem too good to be true until a customer actually drives one!