



## **Offering Memorandum: Gravitational Systems Engineering, inc. Virginia, USA**

PDF version

Gravitational Systems Engineering, LLC.  
6400 Newman Rd.  
Clifton, Va 20124

### **Summary:**

Gravitational Systems Engineering, LLC [GSE] is accepting equity from a maximum of 35 private investors to advance the development and sales of a series of traffic control devices, whose designs are the property of GSE. The legal arrangement for the acceptance of equity investments is as limited partners of GSE equity partners (GSE-EP), who are issued shares of GSE common stock. Each limited partner, with equity exceeding \$100,000 usd, will have a seat on GSE-EP board of directors. GSE-EP partners controlling at least 10% of total equity will also be seated on the GSE board of directors. Once specific milestones are achieved each of the limited partners will have the option of liquidating all or part of their shares either on the open market, through an anticipated IPO in 2014, or selling their shares back to GSE at issue price plus a guaranteed ROI based GSE-EP partnership agreements.

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### **The Company:**

Gravitational Systems Engineering, LLC organized in 2011 in the state of Delaware in the United State of America as a limited liability corporation. The corporation has a mission of marketing traffic control devices and energy generation devices, based upon designs generated by the general partner. These devices are displayed, described, and marketed on the companies website [GravitationalSystems.com](http://GravitationalSystems.com). GSE was formed after its takeover of Gravitational Systems, inc. which was established and organized in the state of New York in the United States of America. GSE controls the rights to four technological innovations, which will be marketed to transport stakeholders around the world.

## **The Market:**

GSE primary products are designed to address the 11.1 twh worldwide market for stationary outdoor lighting. This market includes street lights, traffic signals, electronic roadway signs, toll plazas, and commercial parking facilities. Most sales will be the result of successful institutional bids, in response to RFQs, and test based certifications for institutional equipment schedules. GSE is currently pursuing several US state DOT certification programs, and is preparing bid for numerous US and other RFQ to provide energy service to new facilities.

GSE is pursuing a long term marketing strategy based upon providing solutions to large scale regional environmental problems. These markets include; drought mitigation, air pollution mitigation, water desalination, water elevation and distribution, and water treatment. The unique cost and power density characteristics of GSE devices, (compared to fuel, solar, and wind), allows GSE to actually create markets from human and societal needs.

GSE is working with resellers in Hong Kong and South Africa to test market pumps & compressors through retail channels. Entry level pumps and compressors will be available through established retail channels including Amazon.com in 2012. We are also in the early stage negotiations with various US states, and several countries to participate in drought mitigation demonstration projects. Environmental management projects will also provide GSE with extensive revenues as consulting engineers, and may lead to construction contracts based upon friendly RFP's and technology based set asides.

## **The Securities:**

GSE-EP partners will be able to purchase equity shares in blocks of \$50,000 USD until such time as the GSE board deems that acceptance of additional equity is not in GSE best interests. Our initial target is \$20,000,000 USD, however this may change as GSE customers and markets dictate the need for additional R&D funding, or sales are sufficient to meet corporate expansion goals.

The shares offered are;

**GSE Common:** 4 million shares issued : 2 million outstanding : \$5.00 usd per share.

The GSE board will determine dividends to be paid to common stock holders at the end of each fiscal year. The general guideline will be to limit dividends in the early years and invest heavily in production and applied research facilities. GSE common stock is designed for long term investors, who can wait on the IPO to profit from their investments.

**GSE Noncumulative Preferred:** 2 million shares issued: 2 million outstanding: \$10 usd per share.

Each fiscal year the GSE board will distribute profits based upon the IRR for the period. The maximum dividend will be pegged at NASDAQ Composite (\$COMPX) gain for the period + 5%. We do not expect to pay dividends during the first 8 quarters of operation, however due to the preferred status of this offering, it will take dividend priority. This issue is designed for medium term investors who are seeking significant short term gains, with the security of

dividend preference. These shares and dividends may be converted into GSE common with 10 days notice or the approval of the GSE board of directors.

**GSE 10 year R&D 10% Coupon Bonds: 10,000 Issued: 10,000 outstanding : \$500 usd per**

10 year maturity, 10% coupon negotiable: Face value \$1,296.87: These securities are designed for the long term debt investor. They can be converted to GSE common or preferred with 30 days notice or GSE board approval. 10% coupon is cumulative and payable at the end of each fiscal year. R&D goals: Pour-able PEC, large scale T-dam, and INDRA. GSE is now offering coupon bonds for specific demonstration projects. Project bonds that are currently available include: Jordan River Valley Drought Mitigation Bonds (Face value \$25,000 : Maturity 10 years), West Texas Drought Mitigation Bonds (Face value \$15,000 : Maturity 10 years)

**The Management:**

**Design Engineer & General Manager: Gare Henderson:A personal statement**

I am the principal investor and primary inventor of the technologies listed within this document. I am primarily an entrepreneur, engineer, and computer expert. My professional experience includes adjunct faculty appointments at a number of New York City colleges and universities, including; New York University, City University of New York, Hunter College, Baruch College, The New School for Social Research. During my decade as a university lecturer I specialized in a variety of disciplines, including; Database Management, Artificial Intelligence. Operating Systems design , and numerous computer languages. My formal education was at Indiana University in Bloomington, Indiana, where I studied international marketing. The balance of my education has be largely auto-didactic, academic & practical research, and preparation for lectures.

I have specialized in the design of large scale innovations in the communications, and engineering areas for 5 decades. My ventures include an SEC sanctioned private placement for an email system, the electronic mail corporation, in 1980, and a computer based point of sale advertising program in 1985.

I began the development of the PEC [pressure energy conversion technology] in 1998. The idea occurred to me after a conversation about how much faster my shoes wore out, soles and uppers, than my much lighter friends. I realized that

my 280 lb frame was simply dissipating more energy into my shoes, and that this affect was proportional to body weight, all other things being equal. Since that time I have been generating new designs and developing my concepts of energy as change, dynamic state energy systems, and a global desertification plan the INdRA project.

In the early 90's. I built a computer manufacturing, later services, company, the computer help network, in New York city, based upon a crowd sourcing model with 3 stores in Soho, Times Square, and the toni Westside of Manhattan. We grew to 25 employees. My company were destroyed during the 9/11 attack, and I moved to the DC area to start over.

During this period I have funded the continuous development of Gravitational systems with my company Alacrity-services, a data center services firm.

As the CEO and operations manager of Alacrity services, I have successfully engineered, managed, and implemented complex engineering projects similar to those that will be required to move GSE forward to the next level. Complex project management solutions, including recruiting and managing up to 30 of engineers for demanding large customers including; IBM, XCEL, NREL, US Treasury Department, Boeing, Citrix.

As an entrepreneur, scientist, executive, and professional presenter, I bring a set of key skills to this venture. My scientific expertise is clear in these devices that I present for the committees consideration.

However, my research allows me a depth of understanding of such diverse but appropriate topics, including; Mechanics, structural engineering, energy generation, power distribution, and hydrology. These various skills will allow me to continuously innovate within the arena of energy systems design, and communicate effectively with scientists and engineers as both peers and subordinates. I am also conversant in such diverse but relevant fields of nano-technology, quantum physics, cloud physics, thermodynamics and hydraulics.

While my operational expertise in project management is almost equally diverse. A good example is an engineering project that I undertook for IBM & NREL in 2009. Many other contractors had turned down the project as impossible.

I was contracted to levitate an entire data-center, while the floor was being replaced. Levitation alone is difficult, and yet the most challenging aspect of the project, was that the equipment (400+ racks of million dollar IBM servers), could not be removed from power even for an instant.

Needless to say, I was able to convince over 100 extremely nervous and skeptical stakeholders to approve the project, which was completed successfully within 6 months. I put together a team of local engineers, we designed specialized lifting frames, had the frames manufactured by a local machine shop, and completed the project on time with OSHA oversight, with no significant failures.

Nevertheless, despite my skill set, I realize that in particular financial management is my weakness. Consequently, this business plan funds an external auditing contract and a CFO who will be subject to equity investors quarterly reporting, and selected based upon a track record of success in launching new ventures, and taking them to IPO.

As a personal note I realize that this venture seems to violate the sole founder exclusion which is popular in venture circles. And yet for years I have been building relationships with competent engineers and business managers who are waiting on the sidelines for me to find the funding necessary to properly launch this venture. I will be able to hit the ground running with the support of PhD's from many notable academic and research organizations. I will be a full time founder, with all the passion and focus of a zealot. I also realize that my age may be a factor in your consideration, I am no longer a young bull. To this I can only request that you meet me, and I'm sure you will find me to be a physical and intellectual force of nature.

Legal Counsel: Joseph R. Robinson, McDermott Will & Emery

Joseph Robinson is a minority partner in Gravitational Systems, inc. He holds a 15% stake in the business.

Joseph R. Robinson is a partner in the law firm of McDermott Will & Emery LLP and is based in the Firm's New York office. As a member of the Intellectual Property, Media & Technology Department, Joseph focuses his practice on patent litigation, counseling and procurement for biotechnical, pharmaceutical, chemical and mechanical technologies. His practice also encompasses trademark procurement, counseling and

litigation.

Joseph has extensive experience litigating patent matters and counseling in areas such as agriculture, recombinant molecular biology, pharmaceuticals, enzyme technology, electrochemistry, food chemistry, organic chemistry, plastics, power plants, textiles, complex paper handling machinery and Hatch-Waxman issues. He has procured patents covering inventions in a wide range of fields such as drugs and treatments for autoimmune and infectious diseases; drug delivery systems; vaccines; genetically engineered plants; microorganisms and animals; argo-, inorganic, organic, physical and polymer chemistry; prosthetics; and textile processing.

Joseph also has experience negotiating and drafting license agreements and mergers and acquisitions in the biotechnology, pharmaceutical and brand licensing areas and has worked on interference, reissue and reexamination proceedings.

Joseph frequently speaks to audiences in Europe and Japan on the international effects of recent developments in U.S. intellectual property law. He has been recognized by Super Lawyers as one of the top lawyers in New York. He is admitted to practice in New York and Connecticut, and before the Supreme Court of the United States, the U.S. Courts of Appeals for the Second and Federal Circuits, and the U.S. District Courts for the Eastern and Southern Districts of New York. Joseph is also registered to practice before the U.S. Patent and Trademark Office.

## The Financials

GSE financial objectives are;

1. Employ available capital to exponentially increase our shares of municipal pump/compressor and crash management markets,
2. Generating an attractive short term ROI to establish expansion equity and credit lines.

Our short term (12-16 quarters) strategy is gather capital through product sales and early stage equity investors to build effective and auditable

production, administrative, and marketing operations with a goal of an ROI of 50+% within 16 quarters of full operations.

Our medium term (16-40 quarters) strategy is to build dominant market share in the municipal new construction roadway based energy markets in the developed economies of the Americas, and Asia. Our goal is to establish significant R&D facilities in Northern Virginia, and production capacity in most major national markets. We anticipate a successful IPO, in North American and Asian markets, once GSE reaches roughly \$100 million in gross sales revenue, which will occur between quarters 20-28.

Long term (40-80 quarters) strategy revolve around the establishment of significant academic research, demonstration projects, and regional initiatives for long term weather control, employing GSE DSE appliances for long distance water movement. The INDRA project, a regional hydrology management scheme, will provide a 40-60 year market for roadway based energy systems, while strongly addressing global warming and regional weather predictability.

**Budget summaries:**

**Research & Development:**

Quarters	1-6	7-12	13-20
Facilities	400,000.	75,000	1,500,000
Equip & Materials	800,000.	500,000	2,500,000
Services	150,000	250,000	1,500,000
Travel	40,000	120,000	240,000
Other expenses	30,000	60,000	90,000
Staff	450,000	800,000	2,,500,000
Totals	1,870,000	1,805,000	8,330,000

**Production & Marketing**

Quarters	1-6	7-12	13-20
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Facilities	300,000	450,000	1,250,000
Equip & Materials	650,000	950,000	500,000
Services	75,000	150,000	600,000
Travel	60,000	180,000	360,000
Other	90,000	135,000	250,000
Staff	750,000	1,500,000	3,000,000
Totals	1,925,000	3,365,000	5,960,000
Raw Materials	150,000 (500 U) [1]	600,000 (3,000 U)	1,000,000 (10,000 U)
Sales	750,000	2,250,000	45,000,000
ROI	0	0	51.67% [2]

## Appendices:

### Price List:

Description	Minimum order	1-6 units	7-10 units	11-50 units	50-100 units	Shipping : FOB NYC or L.A.
•Speed bump fluid pump						
<a href="#">R-SBP100</a>	6	\$1,250.00	\$1,187.50	\$1,068.75	\$961.88	\$45.00
<a href="#">R-SBP105</a>	6	\$1,650.00	\$1,567.50	\$1,410.75	\$1,269.68	\$30.00
<a href="#">R-SBP500</a>	3	\$1,975.00	\$1,876.25	\$1,688.63	\$1,519.76	\$45.00
Speed bump air compressor						
*						



R-SBC100 6 \$1,325.00 \$1,258.75 \$1,132.88 \$1,019.59 \$45.00

R-SBC200 6 \$1,855.00 \$1,762.25 \$1,586.03 \$1,427.42 \$30.00

R-SBC400 3 \$2,145.00 \$2,037.75 \$1,833.98 \$1,650.58 \$45.00

Speed  
hump fluid  
pump

R-SHP100 6 \$765.00 \$726.75 \$654.08 \$588.67 \$45.00

R-SHP200 6 \$8,550.00 \$8,122.50 \$7,310.25 \$6,579.23 \$125.00

R-SBP450 3 \$12,750.00 \$12,112.50 \$10,901.25 \$9,811.13 \$450.00

Speed  
hump air  
compressor  
\*

R-SHC330 6 \$925.00 \$878.75 \$790.88 \$711.79 \$45.00

R-SHC450 2 \$9,350.00 \$8,882.50 \$7,994.25 \$7,194.83 \$130.00

R-SHC900 1 \$14,675.00 \$13,941.25 \$12,547.13 \$11,292.41 \$450.00

Horizontal  
RVSS

RVSSH1004 \$2,750.00 \$2,612.50 \$2,351.25 \$2,116.13 \$125.00

RVSSH2022 \$19,600.00 \$18,620.00 \$16,758.00 \$15,082.20 \$325.00

RVSSH4401 \$54,700.00 \$51,965.00 \$46,768.50 \$42,091.65 \$1,125.00

Vertical  
RVSS

RVSSV1056 \$1,450.00 \$1,377.50 \$1,239.75 \$1,115.78 \$155.00

RVSSV2253 \$4,575.00 \$4,346.25 \$3,911.63 \$3,520.46 \$325.00

RVSSV4302 \$24,500.00 \$23,275.00 \$20,947.50 \$18,852.75 \$1,225.00

S-Series

dams &  
void fillers

S-GB-100	25	\$175.00	\$166.25	\$149.63	\$134.66	\$15.00
S-GB-500	25	\$695.00	\$660.25	\$594.23	\$534.80	\$35.00
S-GB-800	10	\$2,475.00	\$2,351.25	\$2,116.13	\$1,904.51	\$325.00
S-GB-5000	1	\$34,550.00	\$32,822.50	\$29,540.25	\$26,586.23	\$2,445.00

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[1] Assumes average unit sales price of \$1500, with a 50% decrease to an average price of \$750 by the 7 quarter. However in subsequent quarters our product mix will include permanent installations with an average unit price of \$4,500

[2] ROI based upon total expenses, research and production costs.

iGSE-EP Gravitational Systems Engineering Equity Partners: Partnership agreement located at [www.gravitationalsystems.com/GSE-EP.html](http://www.gravitationalsystems.com/GSE-EP.html) Executed copy of the agreement will be filed with SEC and regional authorities as required by law or statute.