Spaceport America – The Hub of the Commercial Space Industry, or Just Another “Moon-doggle?”

Ryan M Mott, University of Michigan Law School
Spaceport America – The Hub of the Commercial Space Industry, or Just Another “Moon-doggle?”

Ryan Mott

I. INTRODUCTION

Spaceport America, a brand-new, cutting edge publicly-managed spaceport in the middle of nowhere in the New Mexican desert, is an example of both why we need private project financing to keep our imagination grounded in reality, and also why strictly private project financing would perhaps lead us to pass up extravagant risks and opportunities. Which lesson is more powerful remains to be seen.

The idea of a spaceport started in the early 1990s, and after the legal framework was established, the preparatory work was completed, and the financing was secured, construction began on June 19, 2009. Construction is still ongoing,¹ but so far, the Virgin Galactic site has been completed, and space contractors have begun to launch private flights.² Meanwhile, doubts have arisen over the return on investment.³ There is – understandably – considerable worry that this private space industry will never take off, pun intended.

This paper will first investigate why New Mexico decided to build this spaceport by taking a close look at the history of space exploration in New Mexico and, more directly, the evolution and demise of the VentureStar program, the momentum of which sparked the creation of Spaceport America. Second, this paper will investigate how the New Mexican government analyzed the risk and return on investment of building a spaceport, and compare that analysis to that of a hypothetical private investor. Third, this paper will investigate the project financing behind the construction of Spaceport America and continue to compare and contrast to private sector investment financing. Fourth, this paper will investigate the actual site preparation and construction of Spaceport America, including the presence of third-party private and

public involvement with its development. Finally, this paper will investigate the results of the construction: its profitability, its popularity, and its potential for future development. I then conclude that, though this project was certainly inadvisable from an investment perspective, it still has the potential to influence the New Mexican economy positively.

II. THE HISTORY OF NEW MEXICAN SPACE TRAVEL

The concept of a New Mexican spaceport began in the 1990s, when NASA began using the area now marketed as “Spaceport America” as a land-based space capsule recovery zone. A “capsule recovery zone,” however, is hardly anything at all: rather than being the smooth, aesthetically pleasing, futuristic structure geared toward space tourism that it is now, the area of the New Mexican desert that predated what is now known as “Spaceport America” was little more than an empty desert.

---


The barren, desolate area off of County Road A013 in between the small towns of Cutter and Upham seems like hardly the location for the center of commercial spaceflight, but the absence of permanent structure belies the long historical attachment that New Mexico has had to space exploration. It was in Roswell, New Mexico, where Robert Goddard became known as the Father of Modern Rocketry. It was in White Sands Proving Ground, New Mexico that Wernher von Braun experimented with his V-2 missile design to create the foundation for the American space program. It was in White Sands Missile Range, New Mexico, where the first seven Mercury astronauts spent time training, where the Space Shuttle Columbia touched down, and where the first commercial rocket launch occurred. It was in Holloman Aero Medical Laboratory, New Mexico, where the first American in space was not only trained, but also named after the lab – HAM the Monkey.

---

8 Id.
But it was only in the late 1990s when New Mexico started to be viewed as a plausible location for an actual launch-capable spaceport, beginning with the VentureStar program.

III. THE VENTURESTAR PROGRAM

The VentureStar program was a NASA initiative to replace the U.S. Space Shuttle with a fully-reusable, cheaper, and commercial-ready craft that would have been orders of magnitude safer at a price an order of magnitude cheaper.\textsuperscript{11} The design was revolutionary: instead of having two solid fuel boosters as the Space Shuttle did, the VentureStar had a propulsion system based completely on liquid hydrogen and oxygen, causing the rocket to emit only a steady stream of water vapor harmless to the environment.\textsuperscript{12} Recent developments in composite, ceramic, and computer technology allowed it to save a considerable amount of weight that was previously allocated to the Space Shuttle airframe, propulsion and flight control, leaving 91\% of the VentureStar’s liftoff weight dedicated to cargo and fuel.\textsuperscript{13} In addition, the VentureStar was designed from the very beginning with commercial space development in mind: though it could lift only about half of the payload of the Space Shuttle, it could do so at a launch facility much

\textsuperscript{12} Id.
\textsuperscript{13} Id.
smaller than the one required for its predecessor, allowing it to be used with several smaller, cheaper spaceports (such as Spaceport America) at a relatively lower cost compared to Cape Canaveral.\textsuperscript{14} VentureStar’s true innovation, however, was its reusable one-piece construction.\textsuperscript{15} No longer did launchers have to fish solid rocket boosters out of the ocean and refurbish them through a lengthy process to prepare them for launch; no longer were there wasted components that simply burned up in the atmosphere. Instead, advances in composite technology allowed VentureStar to be housed in a single, streamlined, and completely reusable body. It would launch, land, and lie await to be refueled and launched again, saving money and allowing launches to actually be commercially feasible. This concept of a reusable launch vehicle continues to be fundamental to commercial space flight, and in fact is the core of many of private space development companies’ business plans.\textsuperscript{16}

With its high safety predictions and economical advantages over the antiquated Space Shuttle, VentureStar was part of NASA’s Space Launch Initiative Program, a program geared toward incentivizing the commercial development of spaceflight. To this end, NASA contributed a total of $917 million to the

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{venturestar.png}
\caption{Comparison of Space Shuttle and VentureStar.}
\end{figure}

\textsuperscript{14} Id.
\textsuperscript{15} Id.
\textsuperscript{17} Image taken from VentureStar, WIKIPEDIA.COM, http://en.wikipedia.org/wiki/Venturestar
project, while the developer of the VentureStar, Lockheed Martin, contributed nearly $357 million. Assuming everything went according to plan, Lockheed Martin was prepared to invest up to $7.2 billion in this enterprise.\(^\text{18}\) It seemed like if there were a time for the commercial space industry to flourish, it was now: with over a billion dollars in public and private investment, over seven billion dollars of planned future investment, and a commitment from NASA to retire its shuttle fleet and utilize private commercial launchers, continued investment into the commercial space industry seemed like not only a fantastical idea, but also a plausibly profitable one.

When it came time to select a launch site to begin the commercial exploitation of the VentureStar, Lockheed Martin sent out an RFP to various states, promising to add thousands of jobs to whichever state proved that it could best house the program.\(^\text{19}\) The RFP was very popular and received responses from 15 states sponsoring 31 different launch facilities, including New Mexico, Texas, Montana, Arizona, California, Florida, Idaho, Louisiana, Nevada, North Carolina, Oklahoma, South Carolina, Utah, Virginia and Washington.\(^\text{20}\) The various states were very excited by the proposal and saw this as the emergence of something very big – in the words of Tom Moser, a former NASA executive and previous head of the Texas Aerospace Commission, “Whoever establishes itself as the commercial transportation hub, it’s going to be the major place of operations for decades to come.”\(^\text{21}\)

However, Lockheed Martin made it clear that they only planned to contract for the use of two spaceport facilities for VentureStar operations.\(^\text{22}\) The states competed against each other, trying to offer Lockheed-Martin the best location for its new space program. New Mexico seemed like a great spot for the VentureStar – it has great weather all year long, a dry atmosphere that reduces corrosion, low population density, and little air traffic congestion. Moreover, New Mexico is located at a relatively high 4,600 foot


\(^{21}\) Id.

altitude – which means that instead of needing all of the fuel for a launch at sea level, “the first mile of vertical travel is ‘free!’”

The New Mexican 44th legislature in the first session of 1999 passed House Joint Memorial 25, “Endorsing the Efforts of the Economic Department to Pursue the Establishment of a Spaceport in New Mexico,” where the legislature proclaimed:

NOW, THEREFORE, BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO that it endorse and support the efforts of the economic development department to secure an agreement with Lockheed-Martin to establish a spaceport in New Mexico for the VentureStar assembly, launch and recovery.

With that, the New Mexican legislature proposed to construct and operate the Southwest Regional Spaceport, in no small part due to the tantalizing possibility of acquiring the VentureStar contract. Hence, the seeds of Spaceport America were planted.

Unfortunately, the VentureStar contract never got off the ground. Tests of its half-scale prototype, the X-33, proved to be too expensive and too unpredictable for NASA to continue funding the program. As a

---

result, NASA withdrew any further funding from VentureStar in 2001. Without this funding, Lockheed Martin could no longer afford sponsoring the program. Lockheed Martin withdrew, leaving the construction of the X-33 85 percent complete and an abandoned spaceport on Edwards Air Force Base.28

With the one contract opportunity available disappearing overnight, New Mexico now had little pragmatic financial reason to build the Southwest Regional Spaceport. Yet, VentureStar was not the only planned commercial launch vehicle. A number of commercial launch programs were in development, including the Astroliner by Kelly Space and Technology; the K-1 by Kistler Aerospace Corporation; the Pathfinder by Pioneer Rocketplace; the Roton C-9 by Rotary Rocket Company; the SA-1 by Space Access LLC; and the Space Cruiser System by Vela Technology Development.30 Moreover, the X Prize Foundation offered a $10 million prize to the first team able to launch a vehicle capable of carrying three people to a 100-km altitude – this prize attracted a number of different independent and corporate-backed contestants, and was ultimately won by the precursor to the Virgin Galactic program.31


Thus, despite the lack of a VentureStar program, for which most of the spaceports were designed, New Mexico and several of the other VentureStar state applicants decided to continue their plans for building spaceports. The diagram below shows in blue most of the state-sponsored commercial spaceports that have been constructed over the past couple decades.

These spaceports were developed not from a private-driven partnership between the various states and individual corporations, but rather from the momentum generated by the VentureStar program and the widely-held belief that commercial space organizations were just around the corner. The states possessed no guaranteed, contracted source of revenue, but rather a hope – that if the commercial space industry does come about, they will be the spaceport centers of the planet. It is this same momentum – and not necessarily practicality – that led New Mexico to eventually create Spaceport America.

IV. CLUSTERING AND THE PREPARATORY ANALYSIS OF SPACEPORT AMERICA

Even though the VentureStar program failed, New Mexico did not want to let go of its plan for a spaceport. Yet, there was still the glaring problem of how such a spaceport could be economically

feasible without even a single guaranteed tenant. VentureStar was that one tenant, and while there were a number of smaller startups that could eventually become a client of Spaceport America, none of these could have possibly made up for the expense of a $200 million spaceport.

If Spaceport America were a privately funded project, where the proceeds from the project were expected to cover the cost of development, construction, and administration of the project itself, the spaceport simply could never have been built. From the perspective of project financing, there was extreme industry-specific risk in that the entire market for which the spaceport was being built could simply never appear; there was high political risk in that the voters could one day change their minds on the $200 million boondoggle and take away the large grant of public funding, or that the FAA would never issue a launch license. Moreover, there was hardly an offtake contract at all: the only contract that ever emerged was an agreement with the startup Virgin Galactic that secured a 20-year lease. This lease totaled $27,500,000, hardly 10% of the cost of the project.

But it was not a privately-funded project. Instead, Spaceport America was a publicly-funded project. And while a private investor engaging in project finance must restrict his return on investment calculations to the project itself, the state is not so limited. Instead of looking at Spaceport America’s net profits over time – i.e., the expected revenue from space launch fees and rental contracts minus the development, construction and operation costs – the New Mexican government looked at Spaceport America’s net impact on the New Mexican economy. In addition to the income generated directly from Spaceport America, New Mexico looked at the spaceport’s incidental effect on jobs, new businesses, imports, and investment to the state as a whole. While the spaceport itself would only generate limited revenue in the form of rental fees, the spaceport’s presence would require a completely new manufacturing, research and development, and servicing network for the entire area.

---

The New Mexican legislature was therefore relying on “clustering,” where a single seed industry leads to the development of sub-industries, support businesses, research institutions, and other economy-enhancing activities due to the proximity of the initial seed industry. Such an effect can be seen historically in the Detroit auto industry, the Silicon Valley semiconductor industry, and the Durham Research Triangle biotech industry, where the agglomeration of an initial business led to separate entrepreneurial startups that took advantage of the proximal network effects. Transportation costs are reduced; economies of scale are more easily attained; and research and development is more quickly advanced, as ideas are transmitted amongst like-minded professionals living in the same area.  

Political figures instrumental in the development of Spaceport America compared the development of a spaceport in New Mexico to the development of O’Hare Airport in Chicago or Hartsfield-Jackson Airport in Atlanta. These airports made those cities – imagine what a spaceport could do for New Mexico. This cutting-edge industry would start and stay in New Mexico, and that idea bought a lot of votes. New Mexico had the chance to reap the first-mover advantage.

As evidence of this broad, global view, take the results of an economic study performed by consulting group Futron on behalf of the New Mexican government when it was deciding whether or not to proceed with the construction of the spaceport. In this study, Futron spoke not of initial investment and return on that investment, but on the $70 million that could be spent on state tourism in 2020; the 2500 jobs that would be created through the spaceport construction in 2007; and the $460 million of new “economic activity” that would be created by 2015. This study had a much different focus than a study conducted by a private project investor, and took an analytical approach not confined to the instant

---

39 Futron I at 22.
40 Futron I at 14.
project. As seen in the diagram below, the rental fees and project-specific revenue were planned to account for only a small portion of the “economic pyramid” representing Spaceport America’s entire economic influence on New Mexico.

But though Futron’s report is different in that it embraces a different methodology than a private investor would, it is also different in that it is simply not rigorous. It employs very little quantitative data in its multi-billion dollar predictions for the size of the commercial space launching market: its predictions on suborbital flights, for example, are based almost entirely on a 2002 study that polled 450 high-income individuals on their interests in space tourism and extrapolated that data to the world population. Its predictions on large scale orbital flights are based on a single RFP issued by NASA regarding the resupply of the International Space Station after the shuttle is phased out. The paper gave no attention to initial investment or return on that investment: it only investigated what the impact could be if the spaceport appeared in New Mexico. Needless to say, if a private investor were studying the viability of a given project, there would be considerable attention paid to the initial cost of the project before the economic benefit is realized.

41 Futron I at 16
42 Futron I at 10
43 Futron I at 11.
The fragility of Futron’s analysis can be seen with hindsight when Futron published a report just one year later, reducing their estimates of commercial space flight passengers by 13%.\textsuperscript{44} Within the same report, Futron then doubled its own predictions on the numbers of passengers, citing such factors as the fact that Richard Branson, head of Virgin Galactic, stated that his 90 year old father wished to go into space, and the existence of a new space-themed ride at Disney World.\textsuperscript{45} Futron certainly looked at different kinds of evidence compared to what an a private investment firm would consider, or at least find persuasive.\textsuperscript{46}

But it was not a private investment firm that had to be convinced that this was a good idea: it was only the New Mexican state legislatures and and county voters. And as a result, fueled by the momentum of VentureStar and the captivating, nostalgic idea of human space flight, the New Mexican legislature in 2006 passed the New Mexico Regional Spaceport District Act (NMRSDA), effectively ending the preaparatory phase of the project and beginning the financing phase.\textsuperscript{47}

V. **FINANCING OF SPACEPORT AMERICA**

\textit{a) State Financing and Conditions on Financing}

The NMRSDA gave a statutory framework for financing, constructing, and operating Spaceport America. It first created the New Mexico Spaceport Authority (NMSA) – analogous to a privately-run Special Project Vehicle (SPV) – that was in charge of the entire project. This entity could sue and be sued, enter into contracts, and finance the construction through bonds with a maturity date of not more than thirty years.\textsuperscript{48} The legislature also released a large amount of state funds - $140 million to be exact – for the construction of Spaceport America and the road, power, and water infrastructure necessary to move

\textsuperscript{44} Suborbital Space Tourism Demand Revisited 4, FUTRON CORPORATION, August 24, 2006 available at http://www.futron.com/upload/wysiwyg/Resources/Whitepapers/Suborbital_Space_Tourism_Revisited_0806.pdf (“Futron II”).
\textsuperscript{45} Id. at 6-7.
\textsuperscript{46} Niehuss, supra note 33 at 102-107.
\textsuperscript{48} Id.
people to the launch site in the middle of nowhere. Not all of this $140 million was given freely. Instead, the New Mexican legislature put three conditions on $100 million of the $140 million, awarding the funds only if:

1. The NMSA demonstrated a plan to build Spaceport America for less than $225 million;
2. The NMSA found and contracted with an anchor tenant to ensure that the facility will actually be used;
3. The NMSA acquired a license from the Federal Aviation Administration (FAA) to launch spacecraft.

Ultimately, the NMSA did not fulfill these obligations before they faced a budget shortfall. Yet, when the NMSA requested support, the legislature released a substantial portion of the funds.

If we are considering the NMSA to be analogous to the SPV of a privately-funded project, we may also consider the state government to be analogous to the lender banks that finance the project. We see some similarities: like the lender banks, the state government possessed the money to be lent and expected some kind of a return from the project – in this case statewide economic revitalization. The state government also placed the three conditions on the receipt of the funds. But unlike the lender banks, the conditions that the state government imposed on the NMSA paled in comparison to the pages and pages of warranties, certifications and covenants that permeate a private project finance transaction. Instead, the New Mexican legislature put three broad conditions on the funds, and when the NMSA failed to meet the conditions, they released the funds anyway. There were no accelerated debt clauses or refinancing agreements – there was simply a release of funds with the conditions unsatisfied.

Eventually, the NMSA did acquire a launch license, an anchor tenant, and a plan to build the spaceport under $225 million – but not before it needed a substantial portion of the $100 million. Perhaps, then,

---

49 The Path to Space, supra note 34.
52 Niehuss, supra note 33 at 154-55.
53 Niehuss, supra note 33 at 156, 189-97.
54 Funding Allows Spaceport to Move Forward, supra note 51.
the legislature was correct in releasing the funds, while a risk-averse private investor would not have been as keen on the decision. However, that is insight aided by hindsight, when a risky situation fell in the legislature's favor.

b) Local Financing and Relation to the Sponsor

To supplement the three conditions placed on the financing, the NMRSDA did something else to ensure the successful completion of the project and the economic revitalization that it promised. In addition to securing state-level funding, the NMRSDA also required local authorities in three counties surrounding the spaceport – Otero, Dona Ana, and Sierra Counties – to contribute to the financing of the project.\(^55\) In addition to the $140 million granted by the legislature, $58 million of the funding was required to come from local sources in the form of county-wide sales taxes directed to this particular $200 million project. These taxes could then be used to repay bonds sold for the initial construction costs of the project.

The bond service was administered by the New Mexico Finance Administration (NMFA) through a “public project revolving fund.” NMFA created the fund in order to finance public projects in New Mexico when the state or local agencies needed to look to private banks to cover their up-front costs.\(^56\) The banks would provide the initial payments for construction of the project, and in return the citizens would pay yearly sales taxes as part of the debt service amortization.\(^57\) Since the fund is revolving, the NMFA can drawdown, repay, and redrawdown the loan as needed to accommodate the projects. In New Mexico, 75% of the gross receipts tax went directly to the NMFA debt service obligations – meaning that in order to fund Spaceport America, the local counties had to raise their sales taxes.

\(^{55}\) The Path to Space, supra note 34.


By requiring local counties to invest some of their own money into the project, the legislature made sure that the counties had some incentive to see the project to completion. In a way, this is analogous to a lender’s requirement that a sponsor have a certain amount of equity in the SPV. If the state legislature is the lender and the NMSA is the SPV, then the local counties are likely the sponsors: they have particular interests in seeing the project completed and lose the most if it is unsuccessful.  

However, there is a significant difference in the equity-requiring structure adopted by the New Mexican legislature compared to structures used by private lenders. While private lenders require an equity investment before they will let any money through, the New Mexican legislature required the sponsor counties to have “equity” in the form of local sales taxes only after they awarded a large sum of funding.

The result was that one of the three counties – Otero county – actually rejected the sales tax increase necessary to complete funding for the project. While Otero county was relatively small and did not have a large impact on the total funding, any one of the counties could have decided to withdraw their contribution. If Dona Ana county withdrew, this would have meant a loss of $49 million – nearly 25% of


the total cost of the project – which could have been fatal to the project's completion, and yet still would have left the New Mexican legislature out tens of millions of dollars. It is akin to a sponsor deciding not to invest in project equity after the private lenders supplied the loan, something that the lenders would never allow to happen for obvious reasons.

Despite the risky organization of the financing, however, the financing was ultimately secured. Aided by the state legislature funds, the local bond sales, and some additional Federal funding grants from the FAA and NASA, the New Mexican Spaceport Authority had the requisite funding to start construction.

VI. CONCESSIONS AND CONSTRUCTION OF SPACEPORT AMERICA

Rather than organizing the design and construction of Spaceport America by itself, the NMSA decided to hire a general contractor, Gerald Management, to consult NMSA on the operations. As a result, construction proceeded in a manner quite similar to that of the private industry. The General Contractor sent out Requests for Proposals (RFPs), elicited applications from contractors and subcontractors, and recommended choices to the NMSA.\(^{61}\) Gerald Martin set up everything just like a private project, including online bidding registries, pre-bidding meetings for those interested in submitting bids, and various notices of award for the many different components that go into making a spaceport.\(^{62}\) Fuel storage, water systems, fences and gates, site electrical, and fire facilities were all awarded to different sub-contractors depending on the sub-contractor's price and reputation. A chart of the various components of the project appears below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Contractor</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fences and Gates</td>
<td>Apache Construction Co.</td>
<td>$994,977.00</td>
</tr>
<tr>
<td>Airfield Rescue Fire Facility</td>
<td>Bateman-Hall Inc.</td>
<td>$2,857,506.00</td>
</tr>
<tr>
<td>Terminal Hanger Facility (THF)</td>
<td>Summit West</td>
<td>$32,536,673.00</td>
</tr>
<tr>
<td>THF Apron</td>
<td>David Montoya Construction</td>
<td>$6,106,725.00</td>
</tr>
</tbody>
</table>


\(^{62}\) Id. Compare with Niehuss, supra note 33 at 37-44; John M. Niehuss, International Project Finance Course Materials Part I, 97-102 (Fall 2011).
<table>
<thead>
<tr>
<th>Project</th>
<th>Contractor</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Roadways</td>
<td>CMC Construction, Inc.</td>
<td>$3,193,646.00</td>
</tr>
<tr>
<td>Site Electrical</td>
<td>McDade-Woodcock, Inc.</td>
<td>$3,591,562.00</td>
</tr>
<tr>
<td>Fuel Storage</td>
<td>FNF New Mexico LLC</td>
<td>$778,173.00</td>
</tr>
<tr>
<td>Waste Water</td>
<td>AUI, Inc.</td>
<td>$2,304,456.00</td>
</tr>
<tr>
<td>Water</td>
<td>Smithco Construction, Inc.</td>
<td>$4,815,604.00</td>
</tr>
<tr>
<td>Airfield</td>
<td>David Montoya Construction</td>
<td>$29,451,104.00</td>
</tr>
<tr>
<td>Site Enabling</td>
<td>FNF New Mexico LLC</td>
<td>$2,788,956.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>$89,419,382.00</strong></td>
</tr>
</tbody>
</table>

One thing that is readily apparent is that the cost of the construction – based on the sub-contractor bids alone – is significantly less than the total budget for the project. The $90,000,000 total cost of building Spaceport America is less than half of the amount of money allocated for the project. As in private sector financing, the construction of the project is but one of the many expenses associated with the project as a whole. That is because, on top of having to pay the general contractor consultant, the NMSA had to pay for the preparatory research, initial designs, community outreach, legal, and its own administrative staff, as well as account for any (inevitable) cost overruns that will be incurred by the sub-contractors. In addition, the NMSA had to spend nearly $30,000,000 for the infrastructure development: a spaceport in the middle of the desert with no way to get there is not especially useful; nor is an internal electrical or water system when you have no power lines to bring electricity or pipes to bring water.

Moreover, there were other costs associated with the construction of Spaceport America. The land upon which the spaceport was to be built may have been barren, open desert, but still carried with it public and private interests that would be found in any project.

First, though this was a state-sponsored activity, the NMSA still had to organize a transfer of the public land from the State Land Office (SLO). In return for annual sublease payments, the SLO agreed to forgo any rights to mineral exploration and permit the NMSA to operate on the land. This sort of

63 Id.
64 The Path to Space, supra note 34.
transaction is often found in concession agreements in private sector financing – though of course it was an agreement between two public bodies instead of a public body and a private body.\textsuperscript{65}

Second, the NMSA had to take care of the interests of the private local ranchers surrounding the planned site of Spaceport America.\textsuperscript{66} Rocket launches, as expected, can be a bit of a nuisance when commenced in close proximity to large herds of cattle. As such, the NMSA entered into agreements with the ranchers that gave them up-front compensation, annual usage fees, and an option to sell the ranch at fair market value to the NMSA at any time in the next twelve years. Such an option would carry with it not only the fair market price, but also relocation and migration expenses paid by the NMSA.

Third, the NMSA had to acquire a coveted FAA launch license in order to be legally permitted to launch space-bound vehicles into its airspace. Thankfully, the NMSA had the benefit of being located adjacent to White Sands Missile Range (WSMR), which is one of only two locations in the United States that has completely unrestricted air space all the way into outer space (the other being the White House).\textsuperscript{67} However, before granting a launch license, the FAA needed to perform an environmental assessment and ultimately release an Environmental Impact Statement (EIS) in order to ensure that before constructing the spaceport, the NMSA take into accounts its possible externalities.\textsuperscript{68}

Of particular note in this EIS was Spaceport America's possible impact on the El Camino Trail, a historic trail used from 1592 to the late 1800s by frontiersman traveling the 1500 miles from central Mexico to Santa Fe. Known as the “Jornada del Muerto” (the Journey of the Dead) for its danger and rugged beauty, this trail has been unused for centuries but nevertheless formed an important part of the historic identity.

\textsuperscript{65} See Course Materials Part I \textit{supra} note 62 at 302-03.
\textsuperscript{66} The Path to Space, \textit{supra} note 34.

To accommodate this interest, the NMSA ended up choosing a design for the spaceport terminal to make it virtually undetectable from the El Camino Real. Comprised of a reversed pane glass observation face accompanied by sloping architecture with desert tones from the trail's vantage point, the Spaceport America terminal was actually designed to look like a sand dune.\footnote{Image taken from Spaceport America Image Gallery, Spaceport America, http://www.spaceportamerica.com/news/photo-gallery.html}

On top of this considerable aesthetic change, the NMSA promised several other concessions for the El Camino Real, including a reservation of a 20-mile no development zone; a commitment to limit vehicle traffic; and a commitment to put underground a large segment of a spaceport powerline.\footnote{http://www.mveda.com/data/pdf/Virgin-Galactic-signs-spaceport-deal.pdf} As a result, the El Camino Real Trail Association signed a statement confirming their unequivocal support for the project. Meanwhile, to ensure a local voice in the project, the NMSA set up a Community Advisory Committee where the locals could continue to receive information and provide feedback on the project. Perhaps convinced by the NMSA's efforts on this issue, the FAA eventually gave them the broadest license that they requested.\footnote{http://www.comspacewatch.com/news/viewsr.html?pid=30219}
In essence, it seems that the careful considerations that the NMSA made for the private and public interests of the local communities is something that the public organization did admirably – certainly better than some private projects. Rather than immediately building the structure and dealing with the inevitable problems that would have resulted from the concerns of the ranchers and the trail association, the NMSA negotiated with the parties up front and engaged in specific, flexible, and respectful agreements to ensure that there would not be any problems later on. Perhaps the public nature of the project had something to do with this, since the NMSA is ultimately accountable to the voters of the local counties (and their tax dollars), but the NMSA seems to have handled impressively the same sort of environmental considerations that privately-run SPVs must consider.

As of 2011, the construction was 90% complete, but a successfully built project is a far cry from a successful project. Are people using Spaceport America as the hub of the next generation of commercial spaceflight? Or is it sitting vacant in the desert like the VentureStar launch facility before it?

VII. PRESENT AND FUTURE OF SPACEPORT AMERICA

Spaceport America’s investment outlook continues to be today as it was when the project was first proposed: wholly uncertain and primarily driven by hope and visionaries rather than sound investment strategy. A smattering of hopeful anecdotes spurns the project along, which at times is kept in check with the harsh reality of market forces.

On one hand, the Virgin Galactic and its pioneer visionary Richard Branson continue to invest hundreds of millions of dollars into the suborbital space tourism program, and has made Spaceport America its official base of operations. The company has so far accepted 430 deposits on $200,000 tickets for the first suborbital flights, and Richard Branson has made it clear he expects to fly 500 people within the

73 See, e.g., Course Materials Part I, supra note 62 at 91-92 (regarding the Vedanta bauxite mining project and its failure to balance its demand for minerals with the rights of tribal groups).
first year.\textsuperscript{75} As well as advertising new jobs\textsuperscript{76} and hiring over 100 people,\textsuperscript{77} Virgin Galactic has moved a few of its employees to the Las Cruces, New Mexico area, and CEO George Whitesides has indicated “a big ramp up as we approach commercial operations.”\textsuperscript{78} Though it has not yet successfully flown space tourists, Virgin Galactic’s flagship spacecraft, SpaceShipTwo, has successfully undergone thirteen glide flights to test its atmospheric operations.\textsuperscript{79} Meanwhile, Virgin has invested nearly $250 million into the project and plans to invest at least another $150 million.\textsuperscript{80} There also is least one third-party external investor, Sheikh Mansour, who in 2009 invested $280 million in Virgin Galactic.\textsuperscript{81}

Meanwhile, Virgin Galactic isn’t the only client of Spaceport America. UP Aerospace has launched algae into space for educational research\textsuperscript{82} and launched the ashes of former actor James Doohan (Star Trek’s “Scotty”) to the edge of space and back again.\textsuperscript{83} UP Aerospace has contracted with Lockheed Martin to restart the reusable booster program that they abandoned over a decade ago – the program known as VentureStar.\textsuperscript{84} Armadillo Aerospace, meanwhile, has launched at Spaceport America their own


\textsuperscript{76} Virgin Galactic is Advertising Jobs, Moving Staffers to Southern New Mexico for Spaceport, \textit{The Republic}, January 3, 2012 \textit{available at} http://www.therepublic.com/view/story/923b451c488c49f1a7e07153886d7f66/NM—Spaceport-America-Jobs/.

\textsuperscript{77} Dickson, \textit{supra} note 74.


version of a reusable rocket booster, and successfully sent the booster on an unmanned mission to space and back again.85

Finally, the commercial space industry is not exclusively localized in Spaceport America – around the nation, entrepreneurs have been revealing plans of astronomical proportions, pun intended (yes, again). Microsoft co-founder Paul Allen has recently revealed a space plane that will be the largest plane ever built in the history of mankind.86 PayPal founder Elon Musk and his company SpaceX has launched a privately-developed capsule into orbit and has its eyes on space station resupply contracts with NASA, since the retiring of the space shuttle has put NASA’s checkbooks at the mercy of the Russian Space Program.87 The private space industry is certainly growing, which definitely does not hurt Spaceport America’s financial outlook.

On the other hand, none of this has really happened yet. The Virgin Galactic space tourism flights that were first promised to occur in 2007 was pushed back until 2008, and then 2010, and finally now 2013.\textsuperscript{89} Even if all of the currently registered launches proceed as planned, the Virgin Galactic contract is slated to be worth approximately $4.5 million in total.\textsuperscript{90} Meanwhile, all of the other companies that have leased Spaceport America’s facilities, including Armadillo Aerospace, Near Space Corp, Masten Space Systems, UP Aerospace, Whittinghill Aerospace, and XCOR have entered into contracts worth a combined $10 million.\textsuperscript{91} This pales in comparison to the $200 million cost of the spaceport itself. In fact, it hardly covers Spaceport America’s operating budget of $1.1 million a year.\textsuperscript{92}

\textsuperscript{88} Clockwise from top-left: STIG 1, by Armadillo Aerospace, Spaceport America; Lockheed Martin prototype reusable launch vehicle (derived from VentureStar), UP Aerospace, Spaceport America; SpaceX Falcon launch vehicle; Virgin Galactic SpaceShipTwo; Virgin Galactic SpaceShipOne. Assembled from various sources.
\textsuperscript{91} Id.
Critics have spoken about the irony of the nation’s poorest counties in the poorest states building a space tourism venue for the rich, and receiving nothing in return. While the state spent hundreds of millions on the space resort, roads stayed unmaintained and public schools remained unsatisfactory. Money that could have been spent on public projects has been instead invested into what some people have called a “boondoggle” of the New Mexican governor that sponsored it. Meanwhile, the entire board of directors of the NMSA has been fired, replaced with a new board of directors appointed by the new governor, Governor Martinez. Martinez has scrutinized and audited the budget of the spaceport harshly, “to ensure the best and most prudent use of taxpayer money.” Notably, Martinez has also spoken of the need to increase private investment in the remainder of the project’s construction, while Spaceport America’s executive director has said that she expects the facility to be “operationally self-sufficient” within a year of Virgin Galactic starting its flights. Of course, will Virgin Galactic ever actually start its flights? As stated by William Watson of the Space Frontier Foundation, “Revolutionizing access to space takes time and patience.” But the foreboding history of VentureStar looms in the background as an aggressive attempt to privatize space flight that ultimately ended in failure.

VIII. CONCLUSION

Spaceport America was created by a team of visionaries who took the imagination and ambition of a few hundred thousand average Americans and turned it into something beautiful with nothing but a small gross receipts tax and some state funds to complete it. It is undeniably a source of state pride and its existence – for now – is still supported by the same imagination that created it.

94 Id.
96 Id.
99 David, supra note 78.
What is not supporting Spaceport America, however, is funds. This project never would have been funded privately because, on top of being an extremely risky endeavor in the middle of the desert, it literally had no chance of recovering the initial investment. The $27.5 million offtake contract over a period of twenty years was a fraction of the cost associated with the $200 million construction cost, making the idea that the project alone could have been profitable laughable. If there was a time that the idea of commercial space flight would have succeeded, it was during VentureStar, when NASA was injecting hundreds of millions of dollars of public funds into the project. And all VentureStar is now is an abandoned launch facility at Edwards Air Force Base.

Of course, the New Mexican voters were not looking at project-specific revenue, they were looking at clustering, tourism, job creation, and of course, pride. So without an anchor tenant, without an FAA license, and without any idea of return on investment, they set up the New Mexican Spaceport Authority, financed through state funds and local bond sales, conducted preparatory analyses such as the Futron study, and arranged with contractors and sub-contractors to actually build a spaceport, all the while paying close attention to the needs of its community as any project manager should. Now New Mexico has a spaceport, something that never could have been done through private financing.

The question is: is it a good thing that Spaceport America was built? The impact of clustering and job creation is notoriously hard to measure at such early stages, and likely will be found only with hindsight. Whether this will become the hub of commercial spaceflight or just an invisible, abandoned, sand dune-shaped launch facility remains to be seen.