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Virginia Commercial Space Flight Authority

Governance, Organization and Competitive Landscape Review

November 7, 2011

VCSFA Governance and Competitive Review Report

November 7, 2011

The Honorable Sean T. Connaughton
Secretary of Transportation
Commonwealth of Virginia
Post Office Box 1475
Richmond, Virginia 23218

Secretary Connaughton,

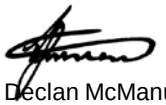
KPMG is pleased to submit this final report for our engagement to conduct a governance, organization and competitive landscape review of the Virginia Commercial Space Flight Authority. The assignment was undertaken pursuant to a Task Order issued by the Virginia Department of Transportation - Division of Transportation and Mobility Planning, dated May 18, 2011.

The objective of our engagement is to review the Virginia Commercial Space Flight Authority ("VCSFA" or "Authority) and make recommendations on organizational and competitive needs, including the adequacy of the composition of the Board of Directors, the competitive standing of the Authority. The scope of services includes reviewing the Commonwealth's objectives for the Authority; conducting interviews with the Board of Directors, Executive Director of the Authority, industry experts and other state authorities; reviewing the governance and organizational structures of the Authority and peer state agencies; reviewing service capabilities of the Authority and peer state agencies; and reviewing the size, opportunities, limitations and competition for commercial space launch services at VCSFA's facilities at Wallops Island.

For our review of the VCSFA, we selected similar state agencies to conduct a governance, organization and competitive landscape comparative analysis. The analysis we have performed for this engagement does not constitute an audit, examination or review in accordance with standards established by American accounting standards or regulatory bodies and we have not otherwise verified the information we obtained from these programs for the purpose of preparing this report.

Thank you for giving us this opportunity to serve the Commonwealth. For questions or concerns regarding this report, please contact me at 512-501-5326.

Yours very truly,



Declan McManus
Principal
KPMG Corporate Finance LLC

Table of Contents

Overview

Overview

- Objectives
- Findings and recommendations

Competitive Landscape Review

Governance and Organizational Review

Next Steps

Appendices

Objective of the study

The objective of our engagement is to review the Virginia Commercial Space Flight Authority ("VCSFA" or "Authority) and make recommendations on organizational and competitive needs, including the adequacy of the composition of the Board of Directors, the competitive standing of the Authority.

This report is organized into three sections: Competitive Landscape, Governance and Organization, and Findings and Recommendations. KPMG conducted an objective assessment of the Authority's organizational structure and competitive needs. Peer state agencies were identified to compare and assess against VCSFA. Each peer state agency has unique attributes that were considered in our comparison to VCSFA. The organizational and competitive assessment of the Authority included the following activities:

- Review the Commonwealth's objectives for the Authority
- Conduct interviews with the Board, Executive Director of the Authority, the Department of Aviation and the Aerospace Advisory Council
- Assess the composition of the Board of Directors
- Assess the types of services provided
- Identify peer state agencies that provide commercial spaceflight and services
- Review the governance and organizational structures and services provided
- Conduct interviews with industry experts, user groups and other space authorities
- Review the size, opportunities, limitations and competition for commercial space launch services as it relates to VCSFA

Findings

1. Customer considerations for launch site selection

- Access to the right orbit for the payload mission is the main determinant for customers when choosing a launch site (assuming satisfactory safety and reliability conditions).
- Florida offers superior domestic geographic location over Virginia for Geosynchronous orbits for significant payload launches.
- Cost, facilities, and scheduling are all important considerations for customers, but usually secondary (when compared to access to the right orbit) unless there are overwhelming differences.

2. Mid-Atlantic Regional Spaceport ("MARS") customer specialization

- Virginia's history, facilities, and geographic location appear to favor customers with small sub-orbital or scientific requirements (in addition to a long history of sounders).
- MARS is evolving to small and medium lift orbital launches which will make use of MARS latitude and azimuths to obtain relatively unique orbital inclinations (e.g., International Space Station ("ISS") resupply needs).

3. MARS existing and new customer expansion potential

- MARS partnership with Orbital Sciences Corporation on the ISS Resupply contract provides a good business base for services and allow MARS to develop new business with other potential payload and launch vehicle customers.
- The infrastructure developed under the Orbital Sciences Corporation MOU is geared towards Taurus II and some similar launch vehicles, but it is not clear how those infrastructure modifications will assist other potential customers.
- In most cases, Virginia does not serve important United States Government ("USG") national security missions or other customer requirements for equatorial synchronous orbits.
  - In the near term, MARS primary focus is likely to remain on serving commercial and suborbital customer requirements.
- Most customers (payload suppliers and vehicle providers) would like to have backup launch facilities.
- Accordingly, some have encouraged a "build it and they will come" philosophy for launch site providers such as MARS.

Findings (cont'd)

5. United States launch capabilities and projected demand

- Commercial space flight is in the early stages of its industry lifecycle.
- Present and projected launch site capabilities in the US appear to be adequate to meet the projected demand.
  - Although historically projected demand has been far in excess of actual demand leading to substantial overcapacity at launch sites and suppliers.
- Ending of the space shuttle program has created much excitement over the role and future of commercial space.
  - There are many new and/or less experienced suppliers competing with the more experienced suppliers for US Government ("USG") payloads.

6. Incentives offered by Virginia and its peer state agencies

- According to public data, Virginia is among the leaders in providing state incentives to attract customers.
  - Current Virginia incentives are adequate to get MARS to the negotiating table.
  - However, it appears that private negotiations between launch sites and customers will probably determine final decisions.

7. MARS strategy

- Based on the market, competitors, and length of time to implement site improvements, MARS appears to be at a decision point and should evaluate its choices and pick its future strategy.
  - (for additional information, see *Competitive Landscape Key Recommendations: Recommendation # 4 – It is time for MARS to evaluate options and choose its strategic direction* for strategic alternatives).

Findings

1. VCSFA Board of Directors

- Size and representation of the Board of Directors is not commensurate with the Authority's limited funding and staffing levels.
- Attaining full participation by the Board of Directors at quarterly meetings has been challenging.
- According to input received , the Board of Directors operates in a reactive mode due to limited resources while the launch related activities are starting to increase. Apparently there has been:
  - Little involvement of Board of Directors in policy, goal setting and marketing efforts.
  - Limited guidance regarding growth strategy, competitiveness and capture plan.
  - Roles and responsibilities are not clearly defined.
- Compared to other Virginia boards, there are fewer board members representing the Virginia executive branch, (e.g., finance, treasury, legal, etc.).
  - There are many Space industry advocates, but few representatives from the operational, financial and business communities.

2. VCSFA organization structure

- Current organization structure is not conducive for recruitment of qualified personnel, business continuity, and marketing the Authority's services.
  - Florida has dedicated resources (approximately $1.9m in FY10) for marketing and development.
- Reliance on contractors to support many functions of the organization is the model most space authorities are using.
  - As launch consistency and volume increases, a shift towards more in-house services is expected.
- While VCSFA continues to use contractors to support non-core functions, reliance on the ODU Research Foundation detracts from organizational identity and business continuity.

Findings (cont'd)

3. VCSFA agreements

- Maryland Memorandum of Agreement ("MOA")
  - Maryland is a valuable strategic partner to the Commonwealth but has limited participation in governance activity.
  - The 2004 MOA between Virginia and Maryland is outdated .
  - Projections for the Authority to be self-sustaining by 2010 do not reflect its current or near-term state.
- Orbital Sciences Memorandum of Understanding ("MOU")
  - Orbital Sciences Corporation's Board of Directors representation is perceived as a conflict of interest by potential customers/potential competitors.

Recommendations

1. Determine investment required to modify current facilities to attract new customers

- A gap analysis should be conducted by MARS management to determine the capital investment needed to make the required infrastructure modifications to attract other customers to the MARS launch site.
  - Improve access to the market.
- The projected longer term payoff from potential new customers should be compared to the investment required, including:
  - Potential for additional operating revenues generation.
  - Associated economic / public policy impacts on the MARS partners.
- In performing this study, MARS management should be encouraged to use a wide range of advisors including potential new customers, NASA, and other advisors as required.

2. Make MARS a multi-use facility

- The partnership with Orbital should be structured to allow other customers to use MARS assets as well as any assets that Virginia has paid for or financed directly or indirectly so that all parties are treated fairly.
- The fair deal should include shared decision making on resource usage and scheduling priorities among all customers.
  - Subject to above, if other customers should reimburse Orbital for use of Orbital's assets, then in a similar manner, Orbital should reimburse the owner when Orbital uses other's assets.

3. Develop market-based usage cost rates

- MARS should develop market based usage cost rates that reflect the MARS infrastructure plus the site, facilities, and range equipment.
  - Decisions are made today for launches which may be several years downstream.
- The pricing strategy should take into account the drive toward long term self sustaining operations at MARS to at least cover recurring annual costs and probably provide for some portion of future next phase investments.
- These rates should be used for all customers taking into account the competitive environment, costs, and interplay between the investments made by the MARS partners, Orbital, and NASA.

Recommendations (cont'd)

4. It is time for MARS to evaluate options and choose its strategic direction

- Based on the market, competitors, and length of time to implement site improvements, MARS appears to be at a decision point and should evaluate their choices and pick their future strategy (probably bounded by #1 and # 2 below):
  1. *Status quo:* Stay with historical launch strengths and a low capital investment.
  2. *Full speed ahead:* Step up investments to participate in the "new big commercial space" and incur the potential payoffs/associated risks of a new market.
  3. *Opportunistic midcourse:* Between # 1 and # 2 above, by being prepared to make some investments quickly while waiting to see how the commercial space market matures and other states react by supplying capacity.

Recommendations

1. Reorganize the Board of Directors

- Establish non-voting advisory committee to leverage expertise of industry professionals and avoid perceived conflict of interest issues.
  - Members should be comprised of industry, education and local government representatives to leverage synergies and support VCSFA's objectives.
- The Board of Directors should have an extensive working session with their advisory committee and the VCSFA Executive Director to establish short- and long-term, measurable goals, target customers and strategy.
  - Once established, quarterly Board of Directors meetings should have a recurring agenda item to assess the Authority's progress.
- Broaden eligibility parameters for the Board of Directors so there is more diversity in terms of professional background (e.g., general business, finance, marketing, operations, research and development, legal).
  - Rely on the non-voting advisory committee for industry experience and guidance.
- Reduce the number of Board of Directors from 13 to between 7 and 9 members
  - More commensurate with the Authority's size and funding level.
  - More responsive to market needs.
  - Assisted by the advisory committee
- Do away with the requirement for one representative each from the counties of Northampton and Accomack.
  - Northampton and Accomack representative(s) may be appointed as board members, but not having the requirement allows greater flexibility to appoint representatives that best serve VCSFA's mission.
  - Allow local representatives to become members of the non-voting advisory committee.

Recommendations (cont'd)

2. Reevaluate and refresh VCSFA agreements

- Maryland is a valuable strategic partner to the Commonwealth but has limited participation in governance activity.
  - The MOA between Virginia and Maryland should be refreshed and consideration of Maryland's Board of Directors representation and annual financial contribution should align with the Authority's strategic direction.
- Orbital Sciences Corporation is a valuable partner to VCSFA and their expertise should be represented in a non-voting capacity on an advisory committee to the Board of Directors to avoid perceived conflict of interest concerns by potential customers.
  - The MOU should be revisited and structured to provide a level playing field for all customers.
  - Any infrastructure developed should support a multi-use functionality, to the extent possible, capable of accommodating a broader range of launch vehicles.

3. Re-engineer the organizational structure in-line with VCSFA strategic direction

- As MARS evolves into a contracting and business entity, serious consideration should be given to adding at least one industry experienced contractual/legal manager and one industry experienced financial manager to provide contracts and costing that will encourage partnership among all parties.
- The ODU Research Foundation has helped the VCSFA address resource constraints. Going forward, core marketing, strategy, finance and other administrative functions should be assumed by VCSFA.
  - Action is intended to encourage organizational identity, enhance recruitment of qualified personnel, and improve organizational commitment .
- Taking into consideration that Florida is Virginia's most direct competitor and engages in extensive marketing efforts, Virginia should decide if increased and consistent funding would enable the Authority to increase its customer base and expand.

Next Steps

1. Governance and Organizational

- Develop a plan to implement new governance and organization structure.
- Make key governance and organization decisions:
  - Decide whether or not to amend the current Board of Directors structure.
  - Assess whether the proposed change will require approval from the Commonwealth legislators.
  - Decide whether ODU Research Foundation relationship is in the best interest of VCSFA.
  - Initiate the dialogue to consider potential modifications to the Maryland MOA and Orbital MOU.
  - Develop goals and objectives for the organization.

2. Strategic / Competitive Landscape

- Conduct a study to determine the capital investment needed to attract new customers (see Competitive Landscape Recommendations).
  - Prepare the scope and schedule for the study.
  - Solicit input from potential customers who would use Wallops for their requirements.
  - Prepare a business case with recommended course of action for the Board of Directors.
- Develop a strategic plan to decide the future direction of MARS.
  - Develop the financial strategy for the pricing of launch services for customers which considers both the competitive pricing structure of the industry, as well as the drive to become more self-sustaining in the future.

Competitive Landscape Review

Overview

Competitive Landscape Review

- Launch sites
- Launches by facility
- Industry segmentation
- Commercial supply and demand
- Commercial launch providers
- Orbital access and payload size
- Commercial space launch providers
- State incentives
- Competitive landscape findings and recommendations

Governance and Organizational Review

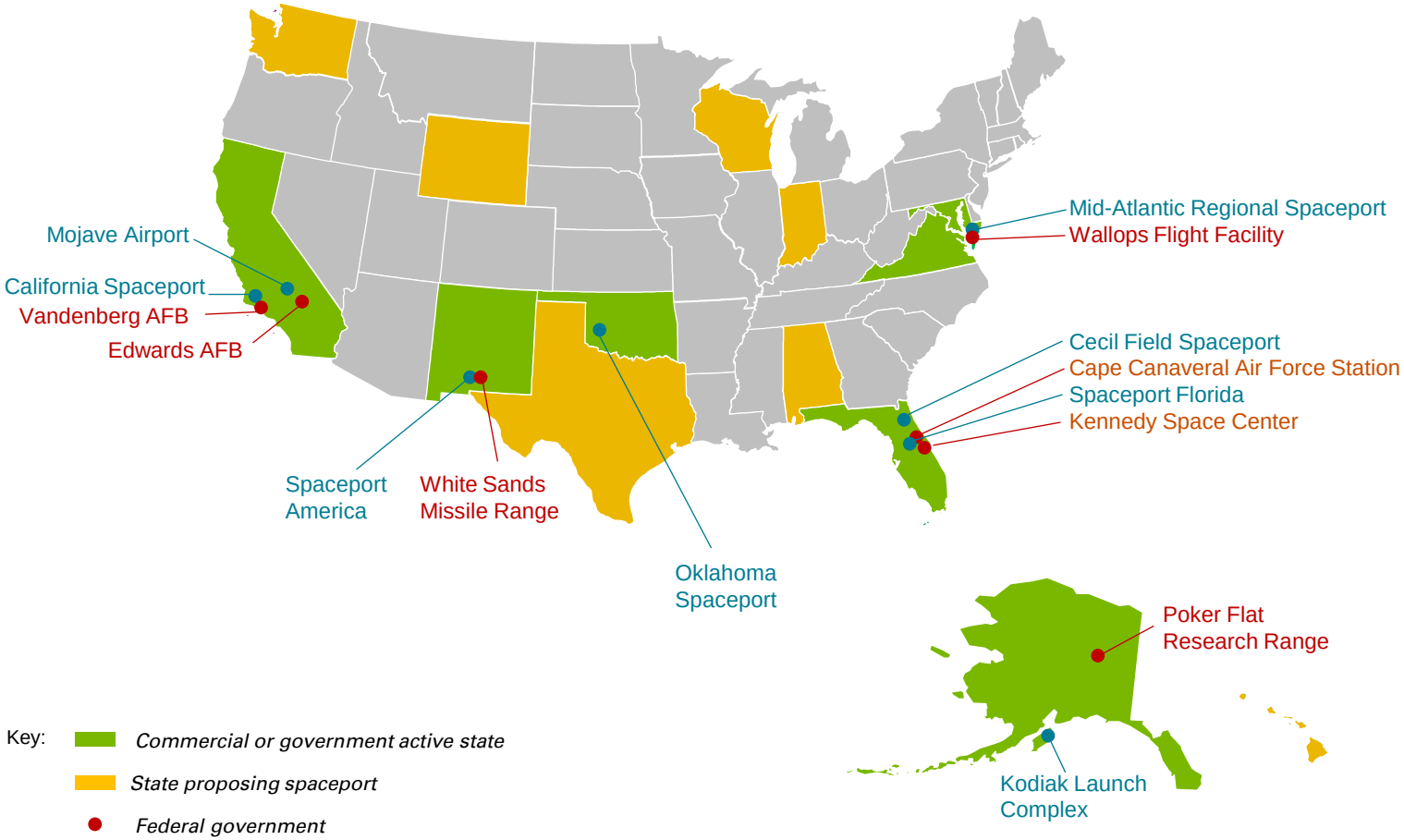
Next Steps

Appendices

Commercial Launch Sites

There are currently 14 states in the US that are active or interested in commercial space activity, half of which have state-owned space authorities. The remaining states have proposed investment and development plans to strengthen their respective commercial presence, but do not appear to be significant competitors in the short term.

US commercial launch sites, 2011



Note: (a) The California Space Authority ceased operations June 2011; (b) Federal agencies, such as the Air Force and NASA, do not need FAA licenses.

Sources: (1) FAA/AST, July 2010; (2) "As shuttle program ends, states step up roles in space", Stateline, June 2011.

Launches by Facility

From 2005 through 2011, a total of 125 launches operated out of 4 US states – Alaska, California, Florida, and Virginia.

The market has been historically held by Cape Canaveral, FL and Vandenberg AFB, CA, operating over 75% of launches in the past six years. While this trend is expected to continue going forward, facilities in Wallops Island and Kodiak appear to be making efforts to further penetrate the market.

Completed launches by facility, 2005-2011P

Notes: (a) Wallops Island, VA figures for 2011-2015 are sourced from MARS's current launch manifest; (b) 2011 reflects completed launches YTD and upcoming launches for the remainder of the year.
Sources: (1) www.spaceflightnow.com; (2) www.marsspaceport.com; (3) KPMG interview program, 2011.

ALASKA

- The Kodiak Launch Complex is owned and operated by the Alaska Aerospace Corporation and is a facility commonly used for US military and defense missions, including rocket launches for target practice.

CALIFORNIA

- The California Space Authority ceased operations on June 10, 2011.
- While there are four sites in California with commercial launch capabilities, Vandenberg AFB appears to be the primary location.
- Virgin Galactic began its operations at Mojave Airport. However, its headquarters going forward will be based out of Spaceport America near White Sands Missile Range in New Mexico.

FLORIDA

- There are three organizations co-located at Cape Canaveral – Cape Canaveral Air Force Station, NASA Kennedy Space Center, and the State owned Space Florida – that share land, assets, and resources. All commercial launches operate out of Cape Canaveral, as the Kennedy Space Center serves only NASA-related missions.
- Additionally, the Cecil Field Spaceport located in Jacksonville appears to have small operations for suborbital launches, but does not seem to be a serious competitor to the MARS spaceport.

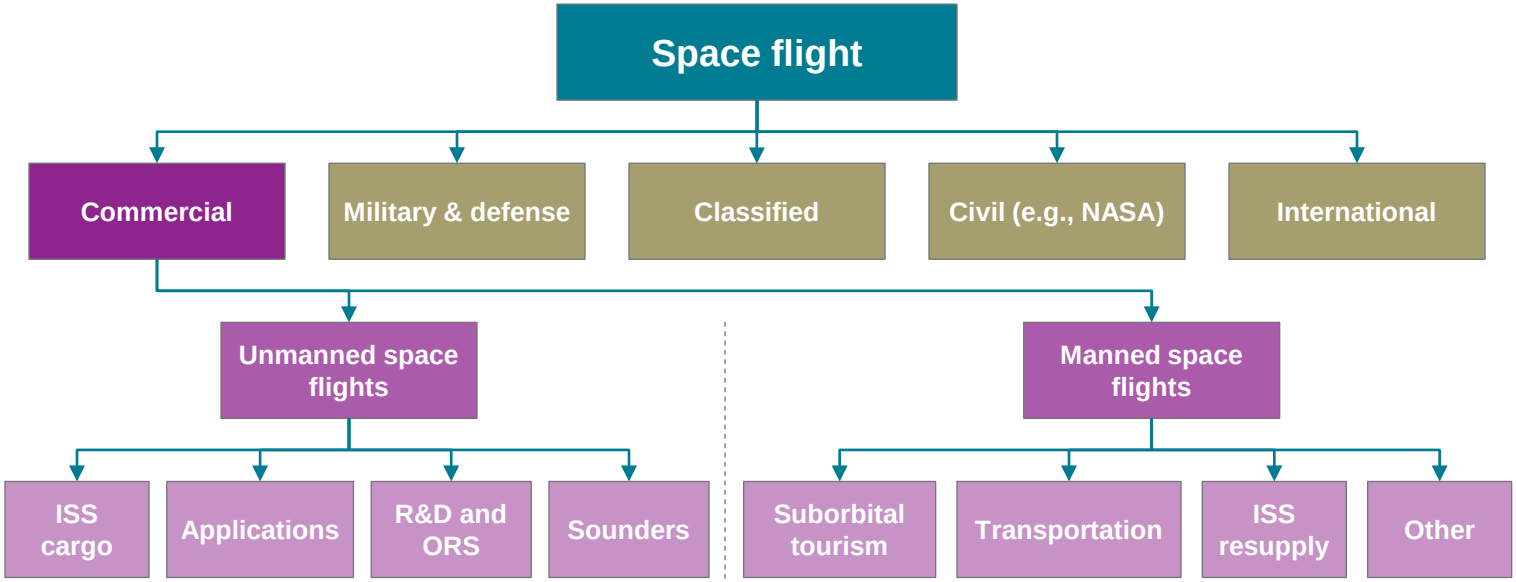
VIRGINIA

- The Mid-Atlantic Regional Spaceport (MARS) and the Wallops Flight Facility are located on the eastern shore of Virginia. MARS is a joint venture between VCSFA and the state of Maryland.

Space Industry Segmentation

Virginia should target government contracted missions of critical importance in addition to the commercial application segment in the near term, while targeting suborbital flight providers to capitalize on longer term opportunities.

That said, market analysts indicate that Virginia may have difficulty attracting government work given their current capabilities relative to more equipped states.



CURRENT US SPACE OPPORTUNITIES

The end of the US shuttle program marked by the Atlantis landing in July 2011 limits the current available US market to unmanned space flights aside from privately sponsored manned flights. Of the unmanned sub-segments, applications are suggested to be the most tangible market to target, as the majority of ISS cargo and R&D/ORS missions have already been contracted out.

- Applications generally include services used by mass populations, particularly for communications (e.g., TV, radio, etc.) purposes.
- However, analysts indicate that the US market is declining as smaller satellite companies are launching from more cost-efficient international locations such as South America and Russia. As a result, US customers are typically large satellite companies with mission critical launches.

FUTURE US SPACE OPPORTUNITIES

The future of the US space industry appears to rely on the long term goals of NASA's interests to land on Mars and the continuing development of space tourism.

- While NASA does not currently have any future human launches planned in the short term, it has expressed hopes for human space travel occurring in 2014 or 2015. In the meantime, NASA is expected to send no more than half a dozen American and international astronauts annually from Russia's Soyuz vehicle.
- Space tourism appears to remain in an infancy stage, but is projected to be one of the key new segments of interest expanding the suborbital space market. Virgin Galactic appears to be the most well-known company with investments made in New Mexico, but many other companies seem hopeful to compete in the coming years.

Sources: (1) "Atlantis lands to end space shuttle era", LA Times, July 2011; (2) "Obama's Plans For NASA: Mars By 2030, $6 Billion Budget Increase Today", io9.com, April, 2011; (3) KPMG interview program, 2011.

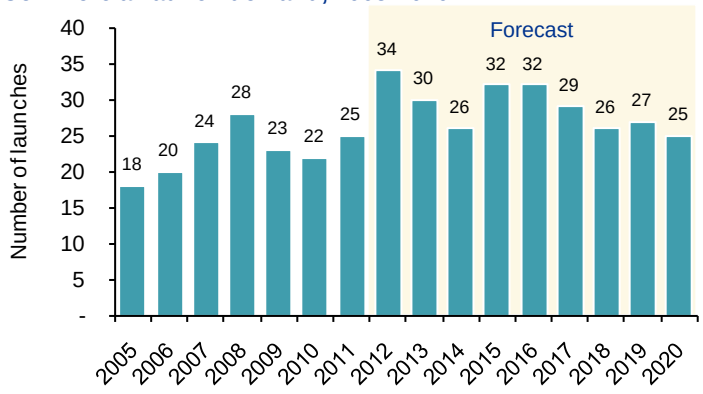
Commercial Demand and Supply

Data suggests that the commercial demand for US launches will average approximately 29 launches annually from 2011 to 2020. Sources suggest that over this timeline the US launch capacity in aggregate could meet this demand based on the assumption that all spaceports are utilized.

However, the majority of this demand is targeted toward California and Florida. Therefore, in reality, launches that seek these popular locations may face operational delays.

The FAA forecasts an average of nearly 29 launches from 2011-2020, up from roughly 23 launches between 2005 and 2010.

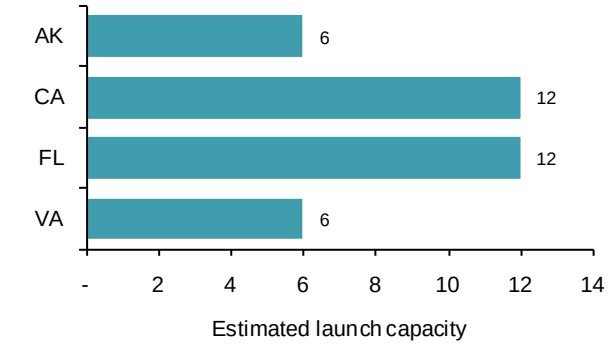
Commercial launch demand, 2005-2020F



Source: "2011 Commercial Space Transportation Forecasts", FAA, 2011.

Total US launch capacity based on the four key states is estimated to be approximately 36 launches a year.

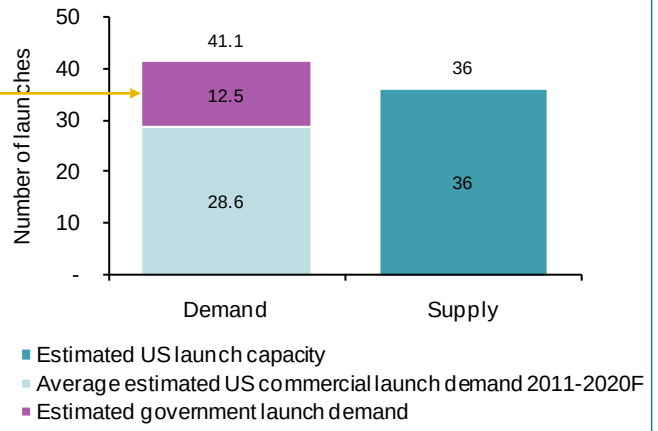
Annual estimated launch capacity by state, 2011



Sources: (1) World Space Systems Briefing, Teal Group, 2011; (2) KPMG interview program, 2011.

Data suggests that the US demand for commercial launches is within reasonable range of total capacity.

Estimated US launch demand and capacity, 2011-2020



Sources: (1) "2011 Commercial Space Transportation Forecasts", FAA, 2011; (2) World Space Systems Briefing, Teal Group, 2011; (3) KPMG interview program, 2011.

Analysts estimate that the demand for government and military launches generally ranges between 10 to 15 per year. These launches have historically operated out of California and Florida spaceports and industry participants anticipate this to continue going forward because of their experience and ability to accommodate complexity.

Due to the fact that government and military missions are given priority over commercial missions, commercial companies may experience launch delays when operating out of or Cape Canaveral.

Payload Size and Orbital Access

Following Florida and California, Virginia appears third in the list of key US spaceports in terms of payload size and orbital access capabilities.

Given that most commercial payloads are in the small to medium segments, Virginia's limitations in launching heavy payloads does not appear to significantly hinder its market opportunity.

However, Florida is likely Virginia's strongest competitor due to its geographic location and thus access to the geosynchronous orbit that Virginia specializes in.

Payload size (without regard of orbital access)

	Launch vehicles	VA	AK	CA	FL
Small lift	▪ Minotaur IV, Athena, Taurus I	●	●	●	●
Medium lift	▪ Delta II, Taurus II, and Falcon 9	◕	◔	●	●
Heavy lift	▪ Delta IV and Atlas V EELV rockets, space shuttles ▪ Although heavy-lift rocket providers are mature programs with established infrastructure and supply chains, spaceports seem less interested in competing in this segment, which typically serves civil & military customers.	○	○	●	●

Available upon the completion of the Taurus II launch facilities, projected operationally ready in 2011.

KLC could be an attractive west coast location for medium-lift for polar orbits. However, further investments would be required to develop this capability.

Sources indicate that heavy lift payloads are typically launched from Florida, with the exception of polar launches that are limited to California.

Orbital access (without regard on payload size)

	Commentary	VA	AK	CA	FL
Suborbital	▪ Common suborbital launches include sounding rockets and target missile tests. ▪ However, current tests are underway to serve space tourism as well.	●	●	●	●
Polar	▪ Virtually all military launches are designated for polar orbit. ▪ Geographic limitations prevent FL and VA access to polar orbits.	○	●	●	○
GEO	▪ Missions for geostationary access are generally related to communication or spy satellites. ▪ While Alaska and California could operate geostationary missions, they realistically would not.	●	◔	◑	●
LEO	▪ While LEO missions can be operated out of all four states, those near California would realistically take place in Alaska.	●	●	◔	●

Key: ○ currently no plan to offer this service exists; ◔ investment and interest to develop this capability are planned and pending construction; ● service currently available; ◕ service is of interest and could be provided pending further investment; ◑ service to offer capability is under construction and pending completion

Notes: (a) State evaluations of payload size do not take into account orbital access capabilities and vice versa; (b) GEO includes MEO for the purposes of this evaluation.

Sources: (1) "A Diversified, Sustainable Aerospace Industry for Alaska, Strategic Plan 2011-2016", Alaska Aerospace Corporation, April 2011; (2) KPMG interview program, 2011.

Spaceport Selection Criteria

Once companies match mission requirements to state capabilities, they appear to focus on launch schedule reliability as the primarily selection criteria for selecting a launch site.

Virginia and Alaska appear to be well positioned to ensure customers of on-time launches while also providing attentive support and service.

State spaceport selection criteria

Criteria	Commentary	VA	AK	CA	FL	Findings
Launch schedule	▪ Sources indicate that an on-time launch is first and foremost reliant on weather. ▪ However, types of missions are also important factors affecting launch schedules; missions associated with federal agencies such as the Air Force generally take priority over commercial and university launches.					▪ Market participants agree that launches operating out of California and Florida are more likely to face scheduling delays due to last-minute federal launches. ▪ Smaller launch sites in Virginia and Alaska seem less likely to experience scheduling setbacks.
Support/ Service	▪ Higher priority missions generally receive appropriate staff support to prepare for launch, leaving commercial providers to wait their turn for already limited resources. ▪ Accordingly, time constraints appear to give smaller facilities such as Virginia a greater advantage.					▪ While quality and level of support and service provided are estimated to be rated almost equally among all four states, Virginia and Alaska staff are suggested to be possibly more available and attentive due to their smaller size and eagerness to strengthen customer rapport.
Perceived capability/ Recognition/ Ease of identification	▪ States with successful track records are perceived to better accommodate commercial launches. ▪ Spaceports with clear and concise names appear to be easier to recognize and market over those with geographically inconspicuous names. ▪ Additionally, consistency in name use is recommended to limit customer confusion.					▪ Analysts indicate that California and Florida may be better able to handle launches with greater complexity due to their experience and sophisticated facilities.
Cost	▪ Market participants agree that while cost is an important factor, in many cases, it is currently not the most important. In order to determine a launch facility, companies must first assess the orbit they need to reached. This first step automatically narrows the pool of spaceports down to one or two US spaceports at most, leaving companies with limited bargaining power. ▪ Analysts also note that most US commercial space activity is primarily contracted by the government, which is suggested to be less price sensitive, or large communication satellite owners under a time constraint. The majority of the expanding commercial satellite market appears to seek international launch sites for cost efficiency purposes. ▪ However, as more states develop launch sites in the US, purchasing power is expected to shift to companies, as there will be more available supply. If the market follows this trend, active states such as VA will face greater challenges to stay competitive and will need to consider investments allowing them to do so.					

Key: – Minimal – Low – Medium – High – Optimal

Sources: (1) "2011 Commercial Space Transportation Forecasts", FAA, 2011; (2) KPMG interview program, 2011.

US Commercial Launch Providers

Of the growing number of commercial launch providers in the US, the following companies have received funds from NASA to execute missions and/or develop launch vehicles to support NASA's long term goals.

NASA contracted US commercial launch providers	
Criteria	**Description**
Orbital Sciences	■ Founded in 1982, Orbital Sciences primarily focuses on small to medium sized rockets and space systems capable of suborbital and orbital launches for civil and military and commercial customers. ■ The company has a $1.9 billion contract with NASA for eight ISS resupply flights using its Cygnus capsule and Taurus II rocket.
Space X	■ Space X was incorporated in 2002 by Elon Musk, the founder of PayPal. The company's US launch sites are Cape Canaveral, FL and Vandenberg, CA, with test facilities located in central Texas. ■ The CCDev2 program awarded Space X with $75 million to further develop its crew transportation capsule. The company is currently the first to launch its capsule and safely retrieve it from the ocean after landing. ■ Additionally, the company received $1.6 billion from NASA to complete 12 cargo flights to the ISS through 2016. ■ The company appears to have the most comprehensive manifest relative to competitors, with a total of 28 missions planned through 2015 to launch from the US (2011: 4; 2012: 4; 2013: 7; 2014: 9; 2015: 4).
Armadillo Aerospace	■ Founded in 2000, Armadillo Aerospace is a developer of reusable rocket powered vehicles, focusing on vertical take off and vertical landing. As of August 2010, the company had seven employees and served customers including NASA and the Air Force. ■ The company is currently only operating suborbital missions, but indicates an interest in developing orbital launch capabilities. ■ In April 2010, Armadillo Aerospace entered an exclusive marketing agreement with Space Adventures, who will direct space tourism customers to use Armadillo's suborbital vehicles that are currently in development.
Blue Origin	■ Blue Origin was established in 2000 by Jeff Bezos, the founder of Amazon.com. The company is headquartered out of Kent, Washington but owns and operates a launch complex in Culberson County, Texas. ■ Blue Origin is one of four recipients to receive award funds for the second round of NASA's Commercial Crew Development (CCDev), receiving $22 million to develop its suborbital launch vehicle New Shepard. ■ There is not as much information available regarding Blue Origin's vehicles and timelines relative to other players.
Sierra Nevada	■ Sierra Nevada is a systems integrator and electronic systems provider that has a Space System division focusing on satellites and space systems for civil and military, and commercial clients. The division is based in Louisville, Colorado but has additional offices in California and North Carolina. ■ Sierra Nevada received $80 million to develop its Dream Chaser vehicle for NASA's CCDev2 program.
Boeing	■ Boeing received the largest funding award for the CCDev2 program; the $92.3 million will fund its Crew Space Transportation-100 that is currently in the initial design phase. This capsule is expected to be compatible with various rockets including the Space X's Falcon 9 and ULA's Atlas and Delta boosters.

Note: The Commercial Crew Development (CCDev) aims to spur creation of private replacement for space shuttles in order for NASA to focus on developing assets for future asteroid and Mars missions. The program began in 2009 and awarded $50 million during the first round. CCDev2 stands for the second round of award funding, which occurred in April 2010 in the total amount of $269.3 million.

Sources: (1) "Private Spaceship Builders Split Nearly $270 Million in NASA Funds", Space.com, April 2011; (2) "2011 Commercial Space Transportation Forecasts", FAA, 2011; (3) Orbital Sciences website, 2011; (4) Space Exploration Technologies website, 2011; (5) Armadillo Aerospace website, 2011; (6) Blue Origin website, 2011; (7) Sierra Nevada website, 2011; (8) Boeing website, 2011; (9) KPMG interview program, 2011.

Missions Committed to State Spaceports

Virginia, Florida, and New Mexico currently have commitments from commercial clients to operate missions out of their spaceports.

Missions committed to state spaceports	
	Current customers
VA	■ **Orbital Sciences Inc.** selected MARS spaceport in 2008 as the test, demonstration, and launch facility to fulfill its $1.9 billion contract with NASA for eight ISS resupply flights using its Cygnus capsule and Taurus II rocket. Orbital has contributed funds of approximately $20 million for VCSFA to develop Launch Pad 0-A to accommodate the Cygnus capsule and Taurus II rocket. Additionally, the company recently launched the ORS-1 spacecraft for the US Operationally Responsive Space Office from MARS. ■ **NASA** is scheduled to operate its Lunar Atmosphere and Dust Environment Explorer (LADEE) mission from Wallops in 2013 using the Minotaur V vehicle.
AK	■ N/A
CA	■ **United Launch Allliance**'s launches appear to operate out of Vandenberg or Cape Canaveral.
FL	■ **Space X** has performed extensive infrastructure improvements at Space Launch Complex 40 at Cape Canaveral Air Force Station. This will be the firm's primary launch site for the NASA ISS resupply mission. The $1.6 billion deal includes 12 cargo flights through 2016 using its Dragon capsule. ■ **United Launch Allliance**'s launches appear to operate out of Vandenberg or Cape Canaveral.
NM	■ **Virgin Galactic**, Richard Branson's venture on space tourism is Spaceport America's primary customer and anchor tenant, having signed a 20 year lease. Facilities are expected to be to be completed in 2011 with multiple successful test flights having already been performed. ■ **UP Aerospace** is partnered with Spaceport America and has launched its commercial and experimental payloads from the location since 2006.

Sources: (1) "Private Spaceship Builders Split Nearly $270 Million in NASA Funds", Space.com, April 2011; (2) "2011 Commercial Space Transportation Forecasts", FAA, 2011; (2) KPMG interview program, 2011.

Recurring State Incentives (1 of 4)

Virginia appears better positioned than Alaska and California in terms of recurring state incentive offerings. Additionally, Virginia appears comparable to Florida and New Mexico.

Alaska state incentives	
Space Related Incentives	■ Note: Most of Alaska's incentives are focused on encouraging and enabling small businesses.
Training Credits/Programs	■ State Training and Employment Program - Grants are available for non-profit or profit organizations to enhance employee skills to meet industry demands for skilled workers.
Sales and Use Tax Credits/Exemptions	■ Alaska does not impose a state-wide sales or use tax.
Property Tax Exemptions	■ Municipalities may wholly or partially exempt all or part of the increase in assessed value of improvements to real property if an increase is directly attributable to alteration of the natural features of the land, or new maintenance, repair, or renovation of an existing structure, if it enhances the exterior appearance of the land or structure.

California state incentives	
Space Related Incentives	■ The California Space Authority and The Business Transportation and Housing Agency work closely with other state agencies to develop incentive packages for specific industries, including spaceports. The California legislature has appropriated over $500,000 for infrastructure development and other work to support space transportation in California.
Tax Credits	■ Community Development Investment Tax Credit - A nonrefundable credit against corporate franchise and income tax is available for a specified percentage of qualified investments in community development areas.
Training Credits/Programs	■ California Employment Training Panel - Assists employers efforts to effectively train workers and maintain skilled workforces.
Enterprise Zone Benefits/Targeted Areas	■ Enterprise Zone Incentives - California offers companies located in an enterprise zone several incentives including sales and use tax paid credit, enterprise zone current expense deduction, and enterprise zone hiring credit.
Sales and Use Tax Credits/Exemptions	■ Local Sales Tax Refund Option - Select communities may negotiate a refund of sales tax for large investment-highly competitive projects.

Recurring State Incentives (2 of 4)

Florida state incentives	
Space Related Incentives	■ Qualified Defense & Space Contractor Tax Refund - Pre-approved applicants (Florida defense, homeland security and space business contractors) creating or retaining jobs in Florida may receive tax refunds of $3,000 per net new Florida fulltime equivalent job created or retained.
Tax Credits	■ Capital Investment Tax Credit - This credit is used to attract and grow capital intensive industries in Florida. Projects must create a minimum of 100 jobs and invest at least $25 million in capital costs.
Training Credits/Programs	■ Quick Response Training Program - An employer driven training program designed to assist new value-added businesses and provide existing Florida businesses the necessary training for expansion. ■ Incumbent Worker Training Program - A program that provides training to currently employed workers to keep Florida's workforce competitive and retain existing businesses.
Discretionary Grants	■ High Impact Performance Incentive Grant - A negotiated grant used to attract and grow major high impact facilities in Florida. Projects must create 50 new full time jobs and make a cumulative investment of $50 million in a three year period. ■ Quick Action Fund - Provides cash grants and sufficient resources to be available to respond to extraordinary economic opportunities and to compete effectively for high-impact business facilities, critical private infrastructure in rural areas, and key businesses in economically distressed urban or rural communities. ■ Qualified Target Industry Tax Refund - Incentive for companies that create high wage jobs in targeted high value-added industries. This includes refunds on corporate income, sales, ad valorem, intangible personal property, insurance and other taxes. Applicants who create jobs in Florida receive tax refunds of $3,000 per net new Florida job, $6,000 if in an Enterprise Zone or Rural Community.
Enterprise Zone Benefits/Targeted Areas	■ Enterprise Zone Incentives - Florida offers an assortment of tax incentives to businesses that choose to create employment within an enterprise zone including sales and use tax, tax refund on machinery and equipment and sales tax refund for building materials, job tax credits and property tax credits.
Sales and Use Tax Credits/Exemptions	■ Manufacturing and Spaceport Investment Incentive Program - A program that encourages capital investment and job creation in manufacturing and spaceport activities in Florida. A tax refund of up to $50,000 on sales and use tax can be paid on eligible equipment purchases.
Property Tax Exemptions	■ Subject to voter approval, any county or municipality can exempt up to 100% of property taxes for new businesses and expansions of businesses located in an enterprise or Brownfield area.

Recurring State Incentives (3 of 4)

Virginia state incentives	
Space Related Incentives	■ Zero G Zero Tax Act - Provides for tax exemptions on income earned from the sale of training for spaceflight participants, launch services to them, or from delivering payloads for NASA Commercial Orbital Transportation Services (COTS) resupply services contracts.
Tax Credits	■ Major Business Facility Job Tax Credit - Qualified companies locating or expanding in Virginia receive a $1,000 corporate income tax credit for each new full-time job created over a threshold number of jobs.
Training Credits/Programs	■ Worker Retraining Tax Credit - Employers will be eligible to receive an income tax credit equal to 30 percent of all expenditures made by the employer for eligible worker retraining. ■ Virginia Jobs Investment Program - Provides customized recruiting and training services to companies creating new jobs or experiencing technological change. ■ Customized Training - Virginia's community colleges customize training to meet the schedule, location, and delivery methodology requirements of employers so that employees can acquire needed job skills and earn academic credit.
Discretionary Grants	■ Discretionary funds are available to the Governor to secure a business location or expansion project for Virginia. Grants are awarded to localities on a local matching basis with the expectation that the grant will result in a favorable location decision for the Commonwealth.
Enterprise Zone Benefits/Targeted Areas	■ Qualified businesses are eligible for cash grants for permanent new jobs created over a four-job threshold. Qualified zone businesses can also benefit from Zone Investment grants if they make a qualified investment in industrial, commercial or mixed use real property in a Zone.
Sales and Use Tax Credits/Exemptions	■ Exemptions on certain qualifying items include purchases used directly and exclusively in activities performed in cooperation with the Virginia Commercial Space Flight Authority.
Property Tax Exemptions	■ Localities may elect to tax certain tangible personal and real property , such as an aircraft, at reduced rates.

Recurring State Incentives (4 of 4)

New Mexico state incentives	
Space Related Incentives	■ Aircraft and Space Vehicle Exemptions - Exempt from compensating tax is the use of commercial aircraft in the transportation of passengers or property in interstate commerce. ■ Spaceport Operations Exemption - The following may be deducted from gross receipts: receipts from launching, operating, or recovering space vehicles in New Mexico, receipts from preparing a payload in New Mexico, receipts from operating a spaceport in New Mexico and receipts from the provision of research, development, testing and evaluation services for the US Air Force. ■ Aircraft Maintenance 7 Remolding Tax Deduction - Receipts from maintaining, refurbishing, remodeling or otherwise modifying a commercial or military carrier over 10,000 pounds may be deducted from gross receipts. ■ Aircraft Manufacturing Tax Deduction - Receipts of an aircraft manufacturer or affiliate from selling aircraft or aircraft parts, or from selling services performed on aircraft or parts or selling aircraft flight support, pilot training or maintenance training services may be deducted from gross receipts. ■ Research and Development Tax Deduction - Aerospace services are the research and development services sold or for resale to an organization for resale by the organization to the US Air Force. When R&D Services are sold to another corporation for resale to the Air Force, the seller's receipts are deductible. If the R&D services are sold to an intermediary for resale to a corporation for resale to the Air Force, those receipts are also deductible.
Tax Credits	■ High-Wage Jobs Tax Credit - Companies may take a credit equal to ten percent of the combined value of salaries and benefits for each new job paying a minimum of $28K per year in areas with populations less than 40,000 persons. Companies located in larger areas must pay salaries of $40K to receive the credit . ■ Rural Jobs Tax Credit - Eligible employers must be located in a rural area. Employers receive a credit of 6.25% of the first $16,000 in wages. In a community of over 15,000, the credit can be taken for 4 years, and 3 years in a community with less than 15,000 in population.
Training Credits/Programs	■ Job Training Incentive Program - Funds classroom and on the job training for newly created jobs in expanding or relocating businesses for up to 6 months. Custom training at a New Mexico public educational institution may also be covered. The program reimburses 30% to 70% of employee wages.
Discretionary Grants	■ Governor's Capital Outlay Program - The goal is to efficiently process and administer capital project appropriations throughout New Mexico. The funds require legislative approval and are appropriated within the budget.
Enterprise Zone Benefits/Targeted Areas	■ Enterprise Zone Building Rehabilitation Credit - The owner of a building that is located in a New Mexico Enterprise Zone and that has been vacant for 24 months may be entitled to a credit that is one-half of the cost incurred to restore, rehabilitate or renovate the building.
Sales and Use Tax Credits/Exemptions	■ Space Gross Receipts Tax Deductions - There are four separate deductions connected with the operation of a spaceport in New Mexico. Businesses may deduct the receipts from launching, operation, or recovering space vehicles or payloads, from preparing a payload in New Mexico, from operation a spaceport in New Mexico and from the provision of research, development, testing and evaluation services for the US Air forces operationally response space program.

Findings

1. Customer considerations for launch site selection

- Access to the right orbit for the payload mission is the main determinant for customers when choosing a launch site (assuming satisfactory safety and reliability conditions).
- Florida offers superior domestic geographic location over Virginia for Geosynchronous orbits for significant payload launches.
- Cost, facilities, and scheduling are all important considerations for customers, but usually secondary (when compared to access to the right orbit) unless there are overwhelming differences.

2. Mid-Atlantic Regional Spaceport ("MARS") customer specialization

- Virginia's history, facilities, and geographic location appear to favor customers with small sub-orbital or scientific requirements (in addition to a long history of sounders).
- MARS is evolving to small and medium lift orbital launches which will make use of MARS latitude and azimuths to obtain relatively unique orbital inclinations (e.g., International Space Station ("ISS") resupply needs).

3. MARS existing and new customer expansion potential

- MARS partnership with Orbital Sciences Corporation on the ISS Resupply contract provides a good business base for services and allow MARS to develop new business with other potential payload and launch vehicle customers.
- The infrastructure developed under the Orbital Sciences Corporation MOU is geared towards Taurus II and some similar launch vehicles, but it is not clear how those infrastructure modifications will assist other potential customers.
- In most cases, Virginia does not serve important United States Government ("USG") national security missions or other customer requirements for equatorial synchronous orbits.
  - In the near term, MARS primary focus is likely to remain on serving commercial and suborbital customer requirements.
- Most customers (payload suppliers and vehicle providers) would like to have backup launch facilities.
- Accordingly, some have encouraged a "build it and they will come" philosophy for launch site providers such as MARS.

Findings (cont'd)

5. United States launch capabilities and projected demand

- Commercial space flight is in the early stages of its industry lifecycle.
- Present and projected launch site capabilities in the US appear to be adequate to meet the projected demand.
  - Although historically projected demand has been far in excess of actual demand leading to substantial overcapacity at launch sites and suppliers.
- Ending of the space shuttle program has created much excitement over the role and future of commercial space.
  - There are many new and/or less experienced suppliers competing with the more experienced suppliers for US Government ("USG") payloads.

6. Incentives offered by Virginia and its peer state agencies

- According to public data, Virginia is among the leaders in providing state incentives to attract customers.
  - Current Virginia incentives are adequate to get MARS to the negotiating table.
  - However, it appears that private negotiations between launch sites and customers will probably determine final decisions.

7. MARS strategy

- Based on the market, competitors, and length of time to implement site improvements, MARS appears to be at a decision point and should evaluate its choices and pick its future strategy.
  - (for additional information, see *Competitive Landscape Key Recommendations: Recommendation # 4 – It is time for MARS to evaluate options and choose its strategic direction* for strategic alternatives).

Recommendations

1. Determine investment required to modify current facilities to attract new customers

- A gap analysis should be conducted by MARS management to determine the capital investment needed to make the required infrastructure modifications to attract other customers to the MARS launch site.
  - Improve access to the market.
- The projected longer term payoff from potential new customers should be compared to the investment required, including:
  - Potential for additional operating revenues generation.
  - Associated economic / public policy impacts on the MARS partners.
- In performing this study, MARS management should be encouraged to use a wide range of advisors including potential new customers, NASA, and other advisors as required.

2. Make MARS a multi-use facility

- The partnership with Orbital should be structured to allow other customers to use MARS assets as well as any assets that Virginia has paid for or financed directly or indirectly so that all parties are treated fairly.
- The fair deal should include shared decision making on resource usage and scheduling priorities among all customers.
  - Subject to above, if other customers should reimburse Orbital for use of Orbital's assets, then in a similar manner, Orbital should reimburse the owner when Orbital uses other's assets.

3. Develop market-based usage cost rates

- MARS should develop market based usage cost rates that reflect the MARS infrastructure plus the site, facilities, and range equipment.
  - Decisions are made today for launches which may be several years downstream.
- The pricing strategy should take into account the drive toward long term self sustaining operations at MARS to at least cover recurring annual costs and probably provide for some portion of future next phase investments.
- These rates should be used for all customers taking into account the competitive environment, costs, and interplay between the investments made by the MARS partners, Orbital, and NASA.

Recommendations (cont'd)

4. It is time for MARS to evaluate options and choose its strategic direction

- Based on the market, competitors, and length of time to implement site improvements, MARS appears to be at a decision point and should evaluate their choices and pick their future strategy (probably bounded by #1 and # 2 below):
  1. *Status quo:* Stay with historical launch strengths and a low capital investment.
  2. *Full speed ahead:* Step up investments to participate in the "new big commercial space" and incur the potential payoffs/associated risks of a new market.
  3. *Opportunistic midcourse:* Between # 1 and # 2 above, by being prepared to make some investments quickly while waiting to see how the commercial space market matures and other states react by supplying capacity.

Governance and Organizational Review

Overview

Competitive Landscape Review

Governance and Organizational Review

- Objectives and powers (not exhaustive) of VCSFA
- Agreements entered into by the Authority
- Governance and organization review
- Funding review
- Governance and organizational options for VCSFA
- Factors to consider in structuring a board of directors
- Governance and organizational findings and recommendations

Next Steps

Appendices

VCSFA Objectives and Powers of the Authority per Legislation

Primary objectives, which are similar to other peer agencies, are economic development and education.

Select (not exhaustive) list of powers granted to the Authority that enable it to satisfy economic development and education objectives.

The ability to appoint an industry advisory board gives the Authority the capability to supplement the Board of Directors knowledge with commercial space expertise and avoid real or perceived conflicts of interest with customers.

Objectives

- Dissemination of knowledge pertaining to scientific and technological research and development among public and private entities, including but not limited to knowledge in the area of commercial space flight
- Promotion of industrial and economic development

Powers

- Appoint an industry advisory board
- Acquire any project and property
- Fix, alter, charge and collect rates, rentals, fees, and other charges for the use of projects, the sale of products, or services rendered
- Borrow money (issue bonds)
- Pledge revenues or receipts as security for Authority obligations
- Make and enter into all contracts and agreements (including interstate compacts and agreements with any person or federal agency)
- Receive and accepts grants and donations
- Render advice, assistance and provide services to institutions of higher education
- Develop and provide programs for scientific and technological research

Source: 1995 Acts of Assembly, c. 758, § 9-266.5; 1996, c. 111; 2001, c. 844

Governor's Plan and Goals for VCSFA

Overarching goal is to make Wallops Island the premier spaceport in America that attracts aerospace companies and high paying jobs that in turn fuels economic growth.

Goals

- Make Wallops Island America's best spaceport
- Attract highly skilled, high paying jobs to the Commonwealth
- Increase tourism and boost the Commonwealth's hospitality industry
- VCSFA to play a supporting role in the Commonwealth's objective to lead the country in Science, Technology, Engineering and Math (STEM) educational programs

Plan

- $1m in annual funding
  - Portion to be dedicated to marketing strategy
- Create an aerospace business roundtable to plan for future spaceport development
- Promote space tourism initiatives
- Aggressively recruit new aerospace companies to Virginia and support policies that nurture and grow existing aerospace companies

Source: Governor Bob McDonnell Press Release (www.bobmcdonnell.com)

Authority Agreements - Orbital Sciences MOU

VCSFA has committed to assisting Orbital develop launch capabilities at Wallops Island that are tailored to address their specific launch needs. A multi-use facility that accommodates various launch providers would be more attractive to potential customers.

Orbital's right of first refusal of use of the VCSFA Project facilities may be perceived as a deterrent to potential customers considering VCSFA for launches.

The MOU with Orbital should be revisited .

Agreement between Orbital and VCSFA regarding the "VCSFA Project"

- The VCSFA project supports the need of Orbital's business activities at the Dulles Campus or Accomack County facility including:
  - Design, testing and manufacturing of Taurus II rockets and other related advanced-technology products, uses and services (does not restrict uses by other business)
  - The proposed work focuses on development that is suited for Orbital's needs (e.g. improvements to the launch pad, improvements to the road and barge transportation system, launch tower and launch mount improvements, fuel system improvements, building improvements in facilities to be used for assembly, storage and testing for launch vehicles etc.)
  - VCSFA retains secondary rights to use the facilities developed, while Orbital has first-use rights
- Orbital's commitment includes:
  - Capital investment of at least $45 million combined in the two locations, by Dec 31, 2011
  - 125 new $100,000+ jobs created by Dec 31, 2011

Source: Memorandum of Understanding made between VCSFA and Orbital Sciences Corporation, July 1, 2008

Authority Agreements – Orbital Sciences MOU (cont'd)

Orbital's MOU states that one representative will be recommended for VCSFA Board of Directors representation. Orbital is a valuable partner to VCSFA but their expertise may better serve the Authority in a non-voting capacity on an advisory committee to avoid perceived conflicts of interest by other customers.

- The agreement outlines the financing needs and sources of VCSFA. VCSFA to issue "initial phase bonds" of which Orbital agrees to pay a portion of principal and interest according to schedule.
  - Initial phase cost of $16 million
  - Bonds (issued by Virginia Public Building Authority)
  - Suggests contingency of $10 million (to be issued concurrently in single bond offering)
  - Subsequent phase bonds not to exceed $15 million
- Other monetary incentives that are being offered by Commonwealth include:
  - Virginia Investment Partnership Grant of $1 million to be made by the Commonwealth to Orbital (based on performance agreement and subject to General Assembly authorization)
  - Virginia Jobs Investment Program (VJIP) incentive up to $87,000
- Board of Directors
  - VCSFA shall recommend Orbital has one representative on the Board of Directors at all times

Authority Agreements – Maryland MOA

Maryland is a valuable partner to the Commonwealth and having Maryland's active participation will aid VCSFA's objectives and should help facilitate expansion.

MOA between Maryland and Virginia was executed in 2004. The agreement should be revisited and refreshed.

- MOA between Secretary of Commerce and Trade of Virginia and Secretary of Business Development for Maryland to develop and implement a joint governance, operation and administration for VCSF Center. The two parties will share rights to infrastructure owned by VCSFA, privileges and responsibilities embodied in contracts, and intellectual property.
- Establishes Mid-Atlantic Institute for Space and Technology (MIST) that helps to support technical skills for engineering, technology, systems and fabrication development
- Joint governance is enacted through the VCSFA BOD i.e., two seats on the VCSFA BOD will be offered to Maryland
- Maryland to contribute $150,000 to the Authority in FY05. Consideration of up to $150,000 to the Authority for four additional years.

Source: Mid-Atlantic Regional Spaceport (MARS) Report of Joint Maryland and Virginia Working Group on Regional Spaceport Implementation. April 15, 2004

Virginia and Peer State Governance Overview

In a comparison of peer state agencies, Virginia is third behind California and Florida in terms of number of board of directors.

Relationships between the state authority and board of directors varies when comparing Virginia to its peers.

Basic State Board of Directors Composition			
State	**Organizational Head and Staff**	**No. of Board of Directors**	**Authority Oversight**
Virginia	Executive Director with 6 FTEs	13	Secretary of Transportation
Alaska	Chief Executive Officer with ~50 FTEs	11	Alaska Department of Military and Veteran Affairs
California	Executive Director with 3 FTEs and 3 PTEs	Ranges (15 – 27)	Ceased operations on June 10, 2011
Florida	Executive Director with 6 FTEs	19	Office of Tourism, Trade, and Economic Development
New Mexico	Executive Director with 6 FTEs	7	New Mexico Economic Development Department

Sources:
Virginia: Virginia Commercial Space Flight Authority Financial Report for the Year Ended June 30, 2010
Alaska: Interview with Dale Nash, CEO – Alaska Aerospace Corporation on July 8, 2011
California: www.californiaspaceauthority.org (no longer active as the authority has dissolved as of June 10, 2011)
Florida: www.spaceflorida.gov
New Mexico: New Mexico Space Authority Financial Report for the Year Ended June 30, 2010

Secretary of Transportation Similar Agency Overview

In comparison to the Department of Aviation and Virginia Port Authority boards, the VCSFA Board of Directors is larger with more virtue of office and ex-officio positions.

To address issue of making quorum and aligning board representation to the Authority's mission, gubernatorial appointee criteria should be broadened in terms of member background and regional coverage.

Commonwealth of Virginia Secretary of Transportation's agencies

- **Department of Aviation (Virginia Aviation Board)**
  - **Selection:** Governor appointment with General Assembly confirmation
  - **Composition**: 8 members selected from 'different' geographical regions of the Commonwealth
    - BOD may appoint a member from the jurisdiction in which an airport is acquired or constructed. Member only has powers that pertain to the airport(s) within the board member's jurisdiction
  - **Term:** 4 year terms (no more than 2 successive)

- **Virginia Port Authority (Board of Commissioners of the Virginia Port Authority)**
  - **Selection:** Governor appointment and the State Treasurer
  - **Composition**: 12 members. 11 members to insure the widest possible geographic representation with no more than three but no less than one from cities in close proximity to Virginia ports and the State Treasurer
  - **Term:** 5 year terms (no more than 2 successive terms

Source: Report of the Secretary of the Commonwealth 2010 - 2011

VCSFA and Peer Agency Organization Summary

The commercial space flight industry is in the early stages of its industry lifecycle and it is difficult to define a static organizational structure with an evolving industry.

Most peer agencies rely on contractors for organizational support across many functions. Until the direction of the commercial space flight industry stabilizes, organizational structures should stay flexible. Having the fixed cost of full-time employees supporting launches does not suit VCSFA's needs at the current and projected launch frequency.

The following illustrates the organizational models of Virginia and peer agencies from a staff versus contractor standpoint:

- Virginia
  - VCSFA is supported by the ODU Research Foundation for finance, human resources, administration, marketing, management and strategy
  - Engineering, safety, and launch functions are supported by third party contractors
- New Mexico
  - New Mexico is scheduled to complete construction of its spaceport in late 2011
  - With the spaceport still under construction, the agency employs finance, operations and technical/engineering staff
- Florida
  - Florida has infrastructure to support small-, medium- and heavy-lift launches with dedicated resources to market their launch capabilities
- Alaska
  - Alaska is fully staffed and only engages contractors during launch ramp up period

VCSFA Revenues and Expenses

Significant increase in non-operating revenue (i.e., State Funding, Federal Funding and Private Funding) in FY10 were used for infrastructure development to enhance launch capabilities at Wallops Island associated with the "VCSFA Project' per MOU with Orbital.

Significant increases in expenses related to grants and subcontractors services primarily relates to supporting the "VCSFA Project".

VCSFA Revenues and Expenses

	FY 2010	FY 2009	FY 2008	FY 2007
Revenues				
Service Revenue	$ -	$ 367,500	$ 187,500	$ 480,000
State Funding	13,105,150	5,754,124	95,000	111,691
Federal Funding	7,711,441	490,777	584,784	903,039
Private Funding	7,297,597	194,807	232,059	293,253
	$28,114,188	**$ 6,807,208**	**$1,099,343**	**$1,787,983**
Expenses				
Administration	$ 345,639	$ 272,741	$ 324,927	$ 173,492
Subcontractor service	317,351	207,423	-	-
Expenses related to grants	8,069,877	734,257	727,958	1,034,261
Depreciation	137,270	137,270	129,425	118,842
Other	43,234	65,542	79,154	88,494
	$ 8,913,371	**$ 1,417,233**	**$ 1,261,464**	**$ 1,415,089**
Change in net assets	**$ 19,200,817**	**$ 5,389,975**	**$ (162,121)**	**$ 372,894**

Sources: Virginia Commercial Space Flight Authority Financial Report for the Years Ended June 30, 2007 through 2010

VCSFA Financial Comparison

Financial comparison illustrates the current area of focus for each state (generally, expenses lag revenues due to normal construction spending delays which will follow the spending commitments):

Virginia – Significant state and federal funding received to expand launch capabilities at Wallops Island

Alaska – Highest service revenue is offset by operational expenses to support launch operations

Florida – Only state with expenditures targeted for economic development of space-related industry activity

New Mexico – Highest state funding to support Spaceport America construction

FY 2010 revenue and expense comparison of peer state agencies:

Sources and Uses of Funds (in $m)
FY 2010

	Virginia	Alaska	Florida	New Mexico
Revenues				
Service Revenue	$ -	$ 11.3	$ 2.8	$ -
State Funding	13.1	3.6	3.8	20.6
Federal and Private Funding	15.0	4.0	-	-
Other				1.5
Total Revenue	**$ 28.1**	**$ 18.9**	**$ 6.6**	**$ 22.1**
Expenses				
Business Development Activities	$ -	$ -	$ 1.9	$ -
Workforce development	-	-	1.0	-
Operations	-	-	3.3	-
Admin / Personnel	0.3	5.5	-	-
Spaceport development	-	-	-	3.6
Subcontractor service	0.3	4.6	-	-
Expenses related to grants	8.1	-	-	-
Supplies	-	0.7	-	-
Other	-	0.5	-	-
Total Expense	**$ 8.7**	**$ 11.3**	**$ 6.1**	**$ 3.6**
Revenue in excess of Expenses	**$ 19.4**	**$ 7.6**	**$ 0.5**	**$ 18.6**

Sources: Virginia: Virginia Commercial Space Flight Authority Financial Report for the Year Ended June 30, 2010
Alaska: Alaska Aerospace Corporation Financial Statements, June 30, 2010
Florida: Space Florida Financial Statements for the Years ended June 30, 2010 and 2009
New Mexico: New Mexico Space Authority Financial Report for the Year Ended June 30, 2010

Factors considered in Governance and Organizational Options

The factors listed to the right were considered when developing alternative options for VCSFA governance and organization. See options A through C on the following slide.

Legal framework

- State authority versus not-for-profit corporation (i.e., 501(c)3)

Board of Directors Structure

- Member size
- Representative composition
  - Industry
  - Ex-officio/virtue of office
  - Business
  - Education

Advisory Committee

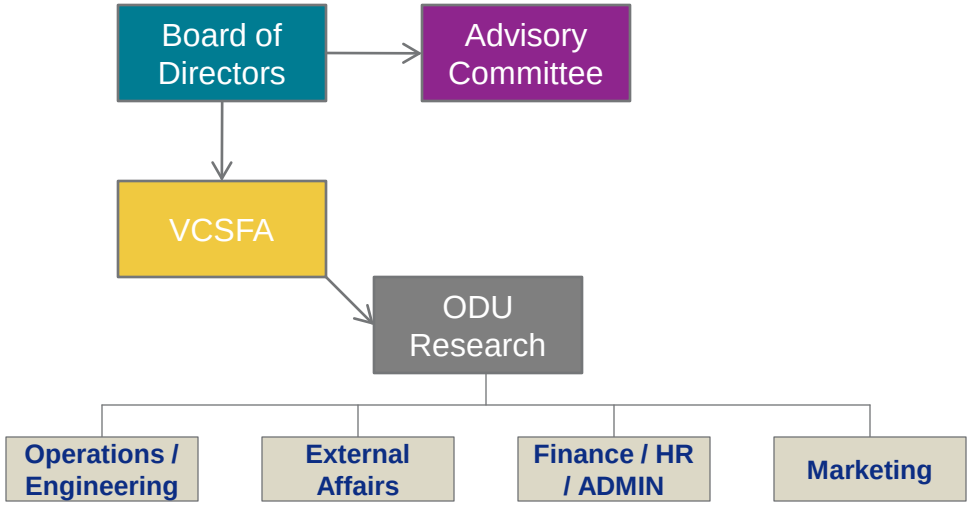
- Role
- Size
- Composition

Staffing

- Role of ODU Research Foundation
- Funding considerations
- Resource alignment

Governance and Organizational Options

Modified Current State – This option preserves the current governance and organizational structure and adds an advisory committee.



Pros

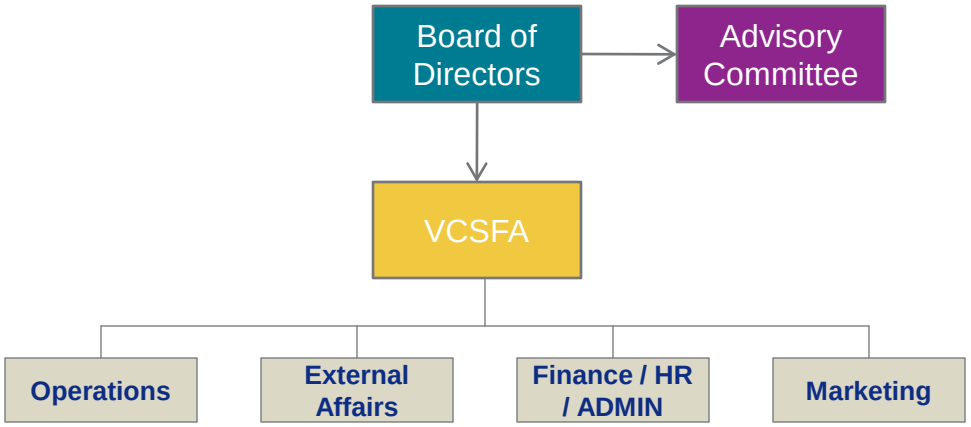
- Minimum disruption to existing structure
  - Creation of a non-voting advisory committee gives the Board the benefit of representation without perceived conflicts of interest
- The ODU Research Foundation gives VCSFA added flexibility
- Comparatively less financial resources required from the Commonwealth

Cons

- Difficult to have personnel's complete commitment to VCSFA's mission when responsibilities are shared with those of ODU Research Foundation
  - Impacts VCSFA economic development objective
- A significant increase in contractor utilization will be required if launch activity at Wallops Island increases

Governance and Organizational Options

Public Authority – This option consists fully functional public authority governance and organizational structure supported with an advisory committee.



Pros

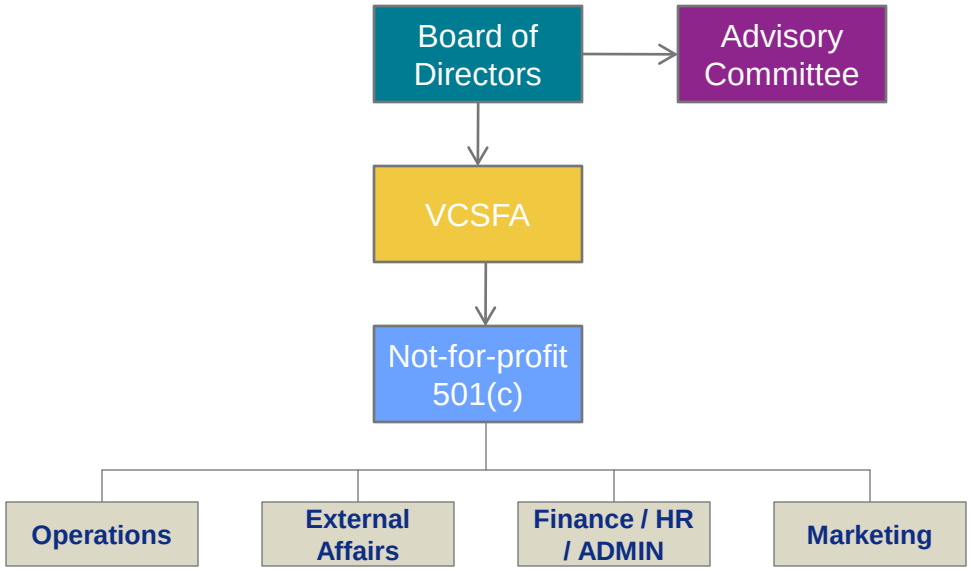
- Fully functioning Public Authority promotes an environment to:
  - Expand existing and develop new customer relationships
  - Engage industry, local government and academic institutions
  - Develop and support the strategic direction of the Authority
- Recruit and retain qualified personnel

Cons

- May require additional funding support
- Loss of reliance on ODU Research Foundation for cash flow solutions

Governance and Organizational Options

Hybrid – This option combines the traditional public authority and Not-for-Profit organization supported by an advisory committee.



Pros

- Greater organizational flexibility
  - Personnel compensation and benefits
  - Administrative rules and policies
  - Strategic direction and business decisions

Cons

- Less direct Commonwealth oversight and control
- Reporting and compliance with 501(c) requirements
- Entity's future direction and objective may not be consistent with that of the Commonwealth

Proposed Governance Structure

Board of Directors (7-9 members)

- 2 representatives by virtue of office:
  - *Deputy Secretary of Transportation (or designee)*
  - *Director of Aviation (or designee)*
- 5 - 7 representatives with the following background(s):
  - *Business/Finance/Marketing*
  - *Space/Aerospace/Aviation-Commercial*
  - *Research & Development*
  - *Legal*

→

Advisory Committee (3-5 non-voting members)

- Composed of 3-5 members with the following background(s):
  - *Commercial space industry*
  - *Education*
  - *Local government representative(s)*

Matters for Consideration:

- 7-9 BODs is more in line with size and funding of Authority
- Creation of the Advisory Committee gives the BOD an opportunity to leverage commercial space industry, local government, and education expertise
- Reduction in ex-officio positions gives the BOD better focus and increases likelihood of periodic meetings and achieving quorum
- Maryland is a valuable strategic partner to Virginia but the criteria for Maryland's representatives should be revisited to ensure alignment with VCSFA's objectives and active participation from members

Factors to Consider in Structuring VCSFA's BOD

Factors to consider that address the current identified areas for improvement.

Factors to consider in structuring a more effective BOD include:

- Define clear roles and responsibilities for the BOD
  - Strategic direction and planning
  - Active role in marketing
  - Policy development and goal setting
  - Strategic and competitive assessments
  - Oversight of finances, operations and results

- Size and representation should be commensurate with the Authority's funding and staffing levels
  - Account for public and private sector participation in Authority 's operations and finance
  - Account for the Authority's specialized commercial space focus
  - Full commitment and consistent participation by each BOD member
  - Promote effectiveness and accountability for goal attainment
  - Eliminate real or perceived conflicts of interest
  - Leverage advisory committee to broaden stakeholder participation

- Government representation on the BOD to keep the Authority connected and informed of Commonwealth programs, policies, budgets, etc.

Common Major Duties of Board of Directors

Key common duties of Board of Directors that should be considered when evaluating the governance structure of VCSFA.

Advise the chief executive

- Review and evaluate the chief executives performance on the basis of job description, program planning and implementation, and management of the organization
- Provide regular guidance to the chief executive

Govern the organization

- Assign priorities to the organization
  - Ensure organization has capacity to execute board established priorities
  - Continuous review of progress towards accomplishing stated priorities

Acquire sufficient resources for the organizations operations

- Adequate financial resources to carry out programs
  - Ensure organization has capacity to execute board established priorities
  - Continuous review of progress towards accomplishing stated priorities

Accountability to the public

- Fiscal accountability
  - Approve the budget
  - Formulate policies related to contracts from public and private resources
- Responsibility for all conditions and policies attached to new services and programs

Source: Brenda Hanlon, "In Boards We Trust"

Common Major Responsibilities of Board of Directors

Key common responsibilities of board of directors that should be considered when evaluating the governance structure of VCSFA

Common Responsibilities of Board of Directors

- Determine the organization's mission and purpose
- Select the executive director
- Support effective organizational planning
- Ensure effective organizational planning
- Ensure adequate resources
- Manage resources effectively
- Determine and monitor the organization's services and programs
- Enhance the organizations public image
- Assess its own performance

Source: Board Source, "Ten Basic Responsibilities of Nonprofit Boards"

Findings

1. VCSFA Board of Directors

- Size and representation of the Board of Directors is not commensurate with the Authority's limited funding and staffing levels.
- Attaining full participation by the Board of Directors at quarterly meetings has been challenging.
- According to input received , the Board of Directors operates in a reactive mode due to limited resources while the launch related activities are starting to increase. Apparently there has been:
  - Little involvement of Board of Directors in policy, goal setting and marketing efforts.
  - Limited guidance regarding growth strategy, competitiveness and capture plan.
  - Roles and responsibilities are not clearly defined.
- Compared to other Virginia boards, there are fewer board members representing the Virginia executive branch, (e.g., finance, treasury, legal, etc.).
  - There are many Space industry advocates, but few representatives from the operational, financial and business communities.

2. VCSFA organization structure

- Current organization structure is not conducive for recruitment of qualified personnel, business continuity, and marketing the Authority's services.
  - Florida has dedicated resources (approximately $1.9m in FY10) for marketing and development.
- Reliance on contractors to support many functions of the organization is the model most space authorities are using.
  - As launch consistency and volume increases, a shift towards more in-house services is expected.
- While VCSFA continues to use contractors to support non-core functions, reliance on the ODU Research Foundation detracts from organizational identity and business continuity.

Findings (cont'd)

3. VCSFA agreements

- Maryland Memorandum of Agreement ("MOA")
  - Maryland is a valuable strategic partner to the Commonwealth but has limited participation in governance activity.
  - The 2004 MOA between Virginia and Maryland is outdated .
  - Projections for the Authority to be self-sustaining by 2010 do not reflect its current or near-term state.
- Orbital Sciences Memorandum of Understanding ("MOU")
  - Orbital Sciences Corporation's Board of Directors representation is perceived as a conflict of interest by potential customers/potential competitors.

Recommendations

1. Reorganize the Board of Directors

- Establish non-voting advisory committee to leverage expertise of industry professionals and avoid perceived conflict of interest issues.
  - Members should be comprised of industry, education and local government representatives to leverage synergies and support VCSFA's objectives.
- The Board of Directors should have an extensive working session with their advisory committee and the VCSFA Executive Director to establish short- and long-term, measurable goals, target customers and strategy.
  - Once established, quarterly Board of Directors meetings should have a recurring agenda item to assess the Authority's progress.
- Broaden eligibility parameters for the Board of Directors so there is more diversity in terms of professional background (e.g., general business, finance, marketing, operations, research and development, legal).
  - Rely on the non-voting advisory committee for industry experience and guidance.
- Reduce the number of Board of Directors from 13 to between 7 and 9 members
  - More commensurate with the Authority's size and funding level.
  - More responsive to market needs.
  - Assisted by the advisory committee
- Do away with the requirement for one representative each from the counties of Northampton and Accomack.
  - Northampton and Accomack representative(s) may be appointed as board members, but not having the requirement allows greater flexibility to appoint representatives that best serve VCSFA's mission.
  - Allow local representatives to become members of the non-voting advisory committee.

Recommendations (cont'd)

2. Reevaluate and refresh VCSFA agreements

- Maryland is a valuable strategic partner to the Commonwealth but has limited participation in governance activity.
  - The MOA between Virginia and Maryland should be refreshed and consideration of Maryland's Board of Directors representation and annual financial contribution should align with the Authority's strategic direction.
- Orbital Sciences Corporation is a valuable partner to VCSFA and their expertise should be represented in a non-voting capacity on an advisory committee to the Board of Directors to avoid perceived conflict of interest concerns by potential customers.
  - The MOU should be revisited and structured to provide a level playing field for all customers.
  - Any infrastructure developed should support a multi-use functionality, to the extent possible, capable of accommodating a broader range of launch vehicles.

3. Re-engineer the organizational structure in-line with VCSFA strategic direction

- As MARS evolves into a contracting and business entity, serious consideration should be given to adding at least one industry experienced contractual/legal manager and one industry experienced financial manager to provide contracts and costing that will encourage partnership among all parties.
- The ODU Research Foundation has helped the VCSFA address resource constraints. Going forward, core marketing, strategy, finance and other administrative functions should be assumed by VCSFA.
  - Action is intended to encourage organizational identity, enhance recruitment of qualified personnel, and improve organizational commitment .
- Taking into consideration that Florida is Virginia's most direct competitor and engages in extensive marketing efforts, Virginia should decide if increased and consistent funding would enable the Authority to increase its customer base and expand.

Table of Contents

1. Governance and Organizational next steps

- Develop a plan to implement new governance and organization structure.
  - Prepare implementation timeline and roles and responsibilities.
  - Establish non-voting advisory committee.
    - Select and appoint members of the advisory committee.
    - Set roles and responsibilities for the members.
  - Assess annual operating funding requirements.

- Make key governance and organization decisions:
  - Decide whether or not to amend the current Board of Directors structure.
  - Assess whether the proposed change will require approval from the Commonwealth legislators.
  - Decide whether ODU Research Foundation relationship is in the best interest of VCSFA.
  - Initiate the dialogue to consider potential modifications to the Maryland MOA and Orbital MOU.
  - Develop goals and objectives for the organization.

- The following will need to be taken into account for governance and organization modifications.
  - By laws
  - Funding
  - Staffing / Recruitment
  - Office space
  - Policies and procedures
  - Key performance indicators

Next Steps (cont'd)

2. Strategic next steps

- Conduct a study to determine the capital investment needed to attract new customers (see Competitive Landscape Recommendations).
  - Prepare the scope and schedule for the study.
    - Assess capital investment needed to launch multi-customer launch vehicles/payloads.
    - Study should take approximately 3 months and be prepared under the direction of MARS and the appropriate USG oversight.
  - Solicit input from potential customers who would use Wallops for their requirements.
  - Prepare a business case with recommended course of action for the Board of Directors.

- Develop a strategic plan to decide the future direction of MARS.
  - The plan should compare and evaluate at least two cases: 1) status quo versus 2) full speed ahead (see Recommendations).
  - For each case: develop a market/competitive assessment, key customers (old and new; commercial and USG) to pursue, financial investments (both one time launch assets and recurring admin, O&M, etc.) and expected returns/risks, and a SWOT assessment.
  - Prepare a business development plan
    - Plans should define steps to establish and maintain long-term relationships with customers.
  - Develop the financial strategy for the pricing of launch services for customers which considers both the competitive pricing structure of the industry, as well as the drive to become more self-sustaining in the future.

Appendix 1 – Launch Capabilities and Activities Heat Map

Launch Capabilities by State

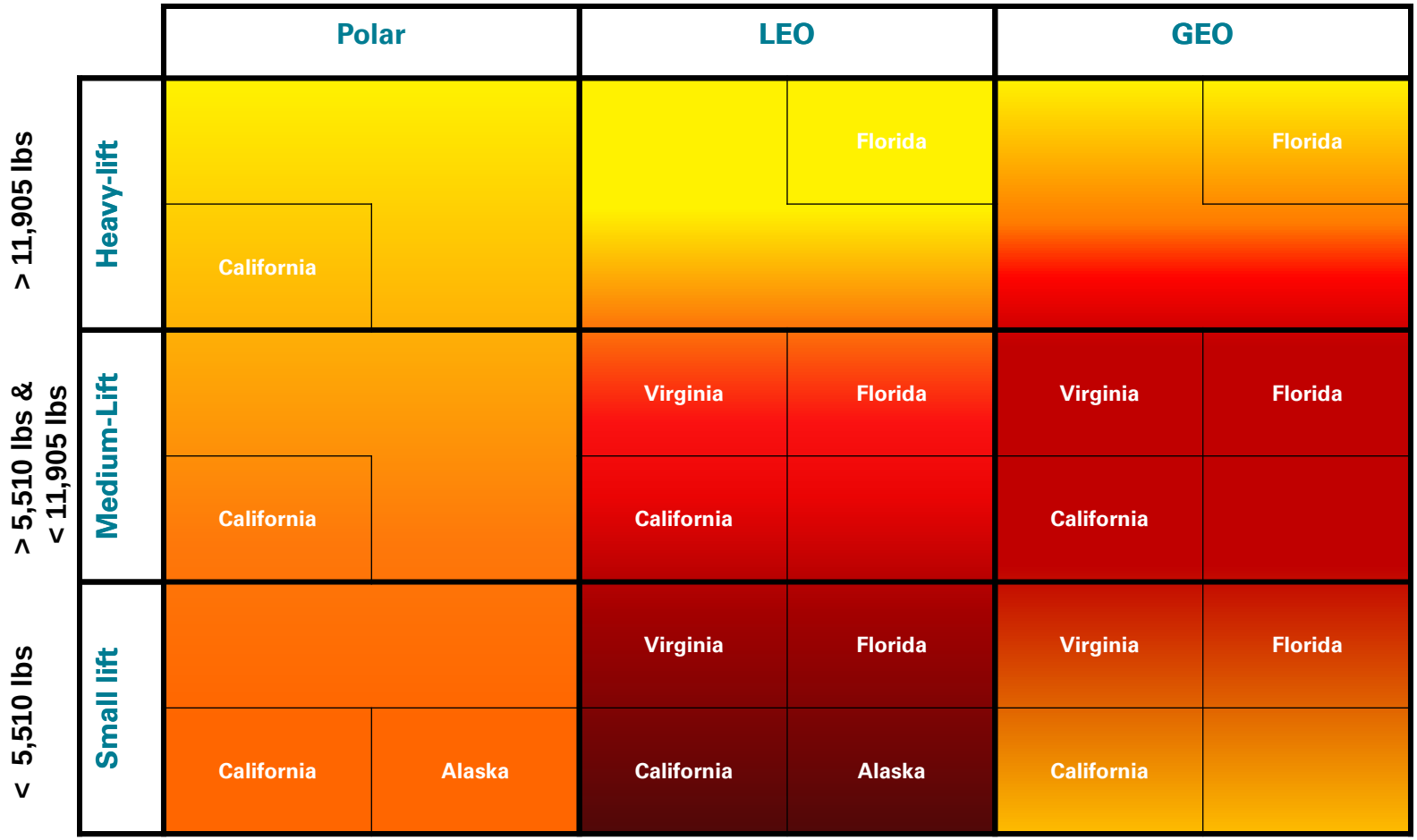
The chart below presents the launch capabilities by orbit for Virginia and competitor states Alaska, California and Florida:

	Polar	LEO	GEO
Heavy-lift	California	Florida	Florida
Medium-Lift	California	Virginia, Florida / California	Virginia, Florida / California
Small lift	California, Alaska	Virginia, Florida / California, Alaska	Virginia, Florida / California

Note: Excludes New Mexico as their capabilities and focus is on horizontal launch / space tourism.

Launch Activity Heat Map by State

The heat map below characterizes commercial space activity by launch type and orbit for Virginia and competitor states Alaska, California and Florida:



Note: Excludes New Mexico as their capabilities and focus is on horizontal launch / space tourism.

Appendix 2 – State Objectives

Virginia and peer state objectives

- **Virginia (VCSFA)**
  - Stimulate aerospace related economic activity in the region
  - Provide education and research in aerospace technologies
  - Infrastructure development that facilitates timely, efficient, safe, and low-cost access to space
  - Preserve the expertise and capability for launch operations at the Wallops Flight Facility
- **Alaska (Alaska Aerospace Corporation)**
  - Develop and promote high technology aerospace industry
- **California (California Space Authority)**
  - Retain and grow all space activity
  - Provides business, infrastructure and policy support
  - Raise public awareness of space
  - Support space and technical education, science literacy and workforce development
- **Florida (Space Florida)**
  - Strengthen Florida's position as the global leader in aerospace research, investment, exploration and commerce
  - Diversify the aerospace economy in Florida and create value-added jobs
  - Capture significant share of emerging space markets
  - Optimally position Florida to support NASA
- **New Mexico**
  - To enhance the economic development, tourism and educational opportunities in the state
  - To provide an environment for the care, development and success of the businesses operating at the spaceport
  - To have a fully operational spaceport facility by 2010

Virginia and peer state objectives

Objectives for Virginia and its peer states with similar commercial space flight authorities are similar with economic impact being the primary objective of each state.

Common objective across peer state authorities is *economic development.*

State Objectives by Category

State	Economic	Aerospace Advancement	Education	Support NASA
Virginia	✓	✓	✓	✓
Alaska	✓	✓	-	-
California	✓	✓	✓	-
Florida	✓	✓	✓	✓
New Mexico	✓	-	✓	-

Appendix 3 – Interview List

Interviewee List

Industry

Interviewee	Title - Organization
Mark Albrecht	Former Director of Space Policy – US Government
Norm Augustine	Author of the Augustine Report on Future of NASA Space
Mark Bitterman	Senior VP Government Relationships – Orbital Sciences
Marco Caceres	Sr. Analyst and Director of Space Studies – Teal Group
Michelle Frank	Director Government Relationships – Orbital Sciences
John Gedmark	Executive Director – Commercial Spaceflight Federation
Mike Gold	Corporate Counsel – Bigelow Aerospace
Paul Guthrie	Technical Lead – Teal Group
J.R. Thompson	Vice Chairman, President, and COO – Orbital Sciences

VCSFA team

Interviewee	Title - Organization
Zig Leszczynski	Director of Operations – VCSFA
Laurie Naismith	Government Relations and Public Affairs Director – VCSFA
Billie Reed	Executive Director – VCSFA

VCSFA Board of Directors

Interviewee	Title - Organization
Vincent Boles	General Manager, Advanced Technology Division – The Aerospace Corporation
Brian Darmody	Assistant Vice President, Research and Economic Development – University of Maryland
Peter Jobse	President and Chief Executive Officer – Center for Innovative Technology
Jeff Windland	VP & Assistant Treasurer – Orbital Sciences

Peer state agency

Interviewee	Title - Organization
Craig Campbell	President and COO – Alaska Aerospace Corporation
Bill Gutman	Technical Director – New Mexico Spaceport America
Dale Nash	Executive Director – Alaska Aerospace Corporation
David Whitaker	CFO – Alaska Aerospace Corporation

Appendix 4 – VCSFA and Peer Agency Board of Directors Highlights

Virginia (VCSFA) Board of Directors Details

Virginia Commercial Space Flight Authority – Board of Directors Composition

- **Members**
  - 13 members
    - Four 'virtue of office' members
    - Four commercial space flight industry reps
    - Two telecommunication industry reps
    - Two county reps (1 Accomack and 1 Northampton)
    - One at-large
  - Virtue of office members
    - President of the Center for Innovative Technology
    - President of Old Dominion University
    - Secretary of Commerce and Trade
    - Secretary of Technology
- **Terms**
  - Appointees as a result of position serve for life of position
  - Three year staggered terms for all others
- **Compensation**
  - None
- **BoD positions**
  - Chairman, Vice Chairman, Secretary, Treasurer (does not have to be on the BoD)
- **Meeting Frequency**
  - Quarterly
- **Committees**
  - Executive and Technical Advisory are the two required committees
  - Executive
  - Technical Advisory committee
    - Charter is to guide VCSFA in obtaining a broad based pool of private sector investment and involvement

Source: 1995, c. 758, § 9-266.4; 1999, cc. 412, 421, 433; 2001, c. 844.

Alaska (AAC) Board of Directors Details

Alaska Aerospace Corporation (AAC) – Board of Directors Composition

- **Members**
  - 11 members total
    - Nine members appointed by the governor
    - Two ex officio
  - Governor appointees characteristics
    - President (or designee) of the University of Alaska
    - Director (or designee) of the Geophysical Institute of the University of Alaska
    - Adjutant general of the Department of Military and Veteran Affairs (or designee)
    - Two members with commercial space background
    - One public school educator or public member
- **Terms**
  - Appointees as a result of position serve for life of position
  - Four year staggered terms for all others
- **Compensation**
  - $100/day per member when conducting official AAC business
- **BoD positions**
  - Chairman and Vice Chairman (must be state residents)
- **Meeting Frequency**
  - Quarterly

Source: Executive Order No. 115 Chapter 27 Section 26.27.020 Board of Directors (Alaska)

Florida (Space Florida) Board of Directors Details

Space Florida – Board of Directors Composition

- **Members**
  - 19 members
    - 12 private sector from the following disciplines or industry:
      - Business/Finance/Marketing
      - Space/Aerospace/Aviation
      - Defense
      - Research & Development
      - Education
    - Five government organization heads
    - Two ex officio (1 Senate and 1 House of Reps.)
  - 12 private sector
    - Appointed by the governor
    - Best effort must be made so that private sector members' combined experience encompasses business, finance, marketing, space, aerospace, aviation, defense, research & development, and education
- **Members (cont'd)**
  - 5 government organization heads
    - Governor (or designee)
    - Secretary of Trans. (or designee)
    - President of Workforce Florida (or designee)
    - President of Enterprise Florida (or designee)
    - Commissioner of Education (or designee)
- **Term**
  - Four years staggered
- **Compensation**
  - None
- **BoD positions**
  - Chairman (governor), Vice Chair (private sector representative)
- **Meeting Frequency**
  - Four times per year

Source: Title XXV Aviation Section 331.308 Board of directors (Florida)

California Space Authority (CSA) – Board of Directors Composition

- **Members**
  - Between 21 and 27 members
    - 15 representatives elected by voting members (5 each for the North, Central, and Southern regions of California)
    - Ex-officio may be added but serve in a non-voting role
    - At-large directors may be appointed after selected by the Nominating Committee and approved by the Board
- **Terms**
  - 3 years for elected
  - 2 years for appointed
- **Compensation**
  - None
- **BoD positions**
  - Chairman
  - Vice-Chairs (3)
  - CFO
  - Secretary
- **Meeting Frequency**
  - At least annually

Source: California Space Authority (CSA) Bylaws as amended April 4, 2004

New Mexico Spaceport Authority – Board of Directors Composition

- **Members**
  - 9 members
    - 7 voting - 6 appointed by the Governor (1 of the 6 a representative from Sierra County) and the Secretary of Economic Development (or designee)
    - 2 non-voting – Lt. Governor and Spaceport America Executive Director
- **Terms**
  - 4 years staggered
- **Compensation**
  - None
- **BoD positions**
  - Chairman
- **Meeting Frequency**
  - At least annually

Source: New Mexico Spaceport Authority: Financial Statements for the Year Ended June 30, 2010