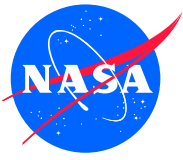


Commercialization Activities at NASA and Resulting Cost Implications

JIM ROBERTS & TERRY LAMBING

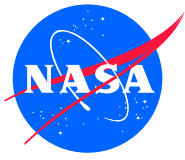
**NASA Kennedy Space Center
Office of the CFO**

**ISPA/SCEA National Conference
June 2011**



Background..

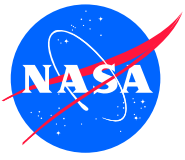
- **On April 15, 2010 President Obama delivered a speech at Kennedy Space Center in which he outlined his new vision for the U.S. space program (as supported by 2011 NASA budget released earlier in February).**
- **Emphasis was placed on enabling the exploration of Space by Commercial entities instead of by Government...**
- **The Constellation Program, which was to fill the void of the retiring Space Shuttle Program - was cancelled.**
- **NASA's role in effect was changed from that of a program manager to one of support and a provider of space-related infrastructure and facilities.**



Kennedy Space Center - Shuttle Infrastructure

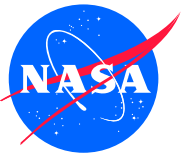


- **Vehicle Assembly Building**
- **3 Orbiter Processing Facilities**
- **Launch Pads A&B**
- **Shuttle Landing Facility**
- **Operations Support Building**
- **Operations Support Building II**
- **Launch Control Center**
 - 4 LPS Control rooms
- **Logistics Facility**
- **8 Acre Footprint, 525' Tall**
- **30,000 SF Each**
- **Fuel/Oxidizer Tank**
 - Capacity of 1.8 M Gal
- **15,000' Runway, 300' Wide**
- **200,000 SF 1378 Office Space**
- **189,000 SF 860 Office Space**
- **230,000 SF 237 Office Space**
- **3-story, 230,000 SF**



• **Immediate Impacts felt at Kennedy Space Center:**

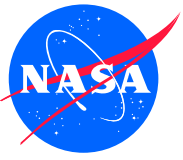
- **Loss of Constellation Program funds**
- **Additional Loss of Contractor workforce**
- **21st Century Launch Complex** – (to modernize KSC facilities)
- **SLS / Heavy Lift Program** (Uncertainties)
- **Focus on Development of Commercial Business Partnerships**
 - **Commercial Crew / CC-Dev2**
 - **Commercial Orbital Transportation Services (COTS)**



Impacts at Kennedy Space Ctr. (continued):

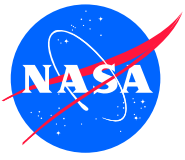
Examples of Commercial & Other Business Partnerships currently under review:

- Air Force X-37 Space Plane
- Project Syros (Launch Facilities)
- Project Ladon (Launch Facilities)
- Project Bluebird (Integrated Launch Services)
- Project Roosevelt (Launch Facilities)
- AFRL Reusable Booster System
- NanoLauncher – Small Satellite Launching System
- Rivian Automotive (Composite / Alternative Fuels)



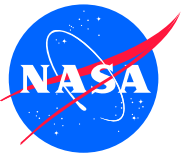
Examples of Commercial Use of KSC Facilities

- **NASCAR & Indy Car testing at Shuttle Landing Facility (SLF)**
- **Airships and Unmanned Aircraft demonstration projects**
- **Movie Filming at KSC (Transformers 3, Men in Black 3)**
- **Office Space Leased to Commercial, plus FAA and other Government Organizations**
- **Commercial Offerings to General Public at SLF**
 - **Zero-G (737-200 A/C) - Weightlessness Simulation Flights**
 - **StarFighters (F-104 A/C) - High Altitude Fighter A/C Experience**



Legal Authorities Used To Establish Agreements

- **Economy Act (1932)**
 - Agreements with Federal Agencies
- **Space Act (1958)**
 - Agreements with Commercial Entities
 - and Agreements with Federal Agencies
- **Commercial Space Launch Act (1984)**
 - Agreements with Private/Commercial Launch Enterprises
- **Commercial Space Competitiveness Act (2000)**
 - for Commercial Space Entities (- not yet used by NASA)



NASA Guidance to Establish Agreements

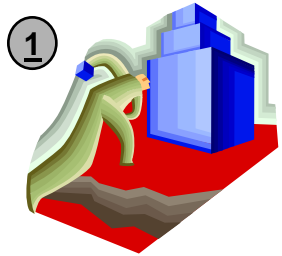
- **NASA Interim Directive (NID) 9090.1**

Covers:

- Administrative Procedures
- Determining Full Cost
- Pricing Reimbursable Agreements
- Enhanced Use Leasing of Real Property



Reimbursable Agreement / Process



1

Request for reimbursable service received from customer.



3

Performing org. prepares reimbursable package (agreement, MdM request & EPR) sends to management for acceptance.



5

Reimbursable Acct. receives package, opens WBS & enters sales order and budget into SAP. Advance payment received earlier.



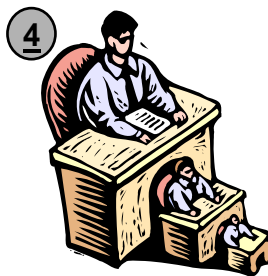
7

Work is tracked by the performing org. As costs are incurred, appropriations are credited from advance payment.



2

Discussions take place between NASA and customer regarding work, schedule, cost, etc. Agreement is created.



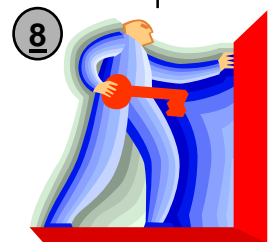
4

Reimbursable package routed to Directorate, Legal & CFO for approval. Agreement signed.



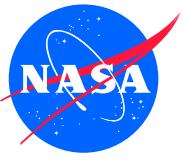
6

Work begins.

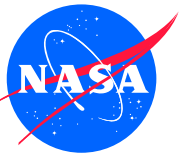


8

At completion of work, a final cost report & bill is issued then agreement is closed.



TYPES OF AGREEMENTS



ECONOMY ACT - 31 USC § 1535 (1932)

“Act provides authorization for Federal agencies to request and perform interagency reimbursable work. Under the Act, such reimbursable work must be in the best interest of the Government, and goods and services are less expensive or more conveniently provided by Federal agencies than by commercial vendors.”

- **Application:**

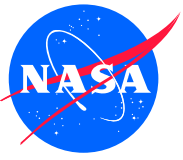
- Applies only to agreements between Federal Agencies

- **Features:**

- Requires pricing at recovery of “actual costs” (full costs)
- Pricing can be rate-based or cost-based..

- **Examples:**

- NOAA Observation Satellites - Interagency Agreement
- Lease of KSC office space by FAA for space launch licensing

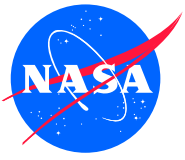


NATIONAL AERONAUTICS AND SPACE ACT ("The Space Act") – 42 USC § 2451 (1958)

"The Space Act authorizes NASA "to enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate, with any agency or instrumentality of the United States, or with any State, Territory, or possession, or with any political subdivision thereof, or with any person, firm, association, corporation, or educational institution."

- **Application:**

- Agreements w/ Commercial Customers & Federal Agencies
- Authorizes NASA to enter into agreements as may be necessary in the conduct of its work..
- Primary Authority for NASA reimbursable business



The SPACE ACT (continued..)

- **Features:**

- Allows wide range of Uses and Agreement Topics
- Pricing is “full cost” but may be adjusted in conjunction with direct benefit to NASA - - documentation is required

- **Examples:**

- Use of KSC facilities for Commercial Space enterprise
- Testing of Race Cars on Shuttle Landing Facility (SLF)
- Agreements with Mercedes Benz & Honda for automobile demonstration & testing
- Use of SLF Hangar by Fish & Wildlife Service helicopter



COMMERCIAL SPACE LAUNCH ACT (CSLA) – 49 USC § 701 (1984)

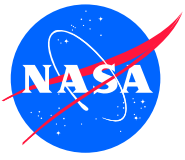
“Governs the sale, by NASA, of launch and reentry property for fair market value and the sale of launch and reentry services for direct cost only. The charge for launch services or reentry services is an amount equal to the direct costs, including the basic pay of Government civilian and contractor personnel, the Government incurred because of acquisition of the services.”

- **Application:**

- Agreements with the Commercial Space Launch Industry
- CSLA was established to provide commercial space companies with incentives to grow the U.S. space launch industry

- **Features:**

- Private Sector bears reasonable portion of investment risk & responsibility



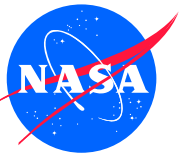
CSLA (continued...)

- **Features (cont.):**

- Calls for Pricing based on 'Direct Cost' (-see next slide)
- Price adjustments under CSLA authority require the concurrence of the cognizant Program Manager and approval of the Center CFO

- **Examples:**

- NASA has Agency-wide CSLA Agreements with Boeing, Lockheed, Space-X and Orbital Sciences for development and testing of new vehicles and space launch systems



- **“Direct Cost”– as defined by CSLA..**

- Cost must be directly associated with agreement’s commercial launch effort.
- NASA would not have otherwise incurred these costs.. (except Civil Service labor)
- Civil service salary and fringe benefits are allowed if directly applicable to effort (Management oversight cost are not allowed)
- “Pooled” costs are not allowed, however...
- Contractor G&A costs may be allowed since NASA would not otherwise have incurred these costs..



COMMERCIAL SPACE COMPETITIVENESS ACT - (CSCA) – 15 USC § 5807 (2000)

Authorizes NASA to allow commercial entities to use its facilities on a reimbursable basis – if used to support space-related effort, and equivalent commercial services are not reasonably available. Provides broad authority.

- **Application:**

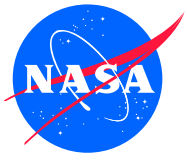
- Space-related agreements with non-Federal entities

- **Features:**

- Direct cost only may be charged – full cost is allowed

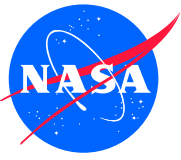
- **Examples:**

- No agreements under CSCA authority have yet been written by NASA. (Special permission needed.)



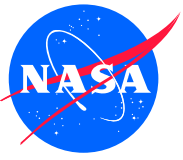
Summary of Legal Authorities:

REIMBURSABLE CUSTOMER	AGREEMENT	PRICING
Federal Government	Economy Act	Actual Full Cost
Federal Government Non-federal Government Private entities	Space Act	<ul style="list-style-type: none"> • Cost-Based • Market-Based • Fair and Reasonable (at less than full cost)
Private Sector	Commercial Space Launch Act (CSLA)	Direct Cost
Non-Federal	Commercial Space Competitiveness Act (CSCA)	Direct or Full Cost

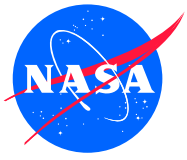


OTHER AGREEMENT TYPES:

- **Enhanced Use Leases**
 - Examples: Land for Solar Farm, Cell Towers, and Press Sites for CBS, NBC, etc., possible office space leases, Exploration Park..
 - Allows NASA to retain profits
- **Use Permits**
 - Can be used with any Real Property
- **Memorandum of Agreement (MOA) & Memorandum of Understanding (MOU)**
 - Mostly with other Agencies – usually no cost



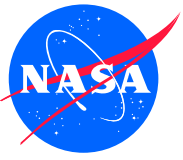
Examples of KSC Commercial Leasing



Office Space

Office Class A	-	\$22.21 / sf
Office Class B	-	\$16.94 / sf
Office Class C	-	\$14.84 / sf

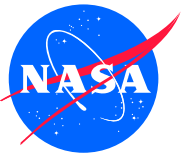




Processing Facilities

Multi-Payload Processing Facility (MPPF)
MARKET BASED RENT \$90.00 – \$120.00 /sf
(varies with services provided).

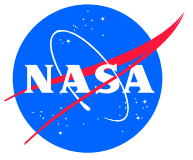




Conference Rooms

OSB II 5th Floor Conference Room
Approx. \$6,500 per day





Shuttle Landing Facility Usage

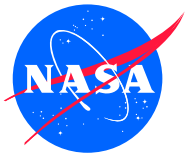
NASA capabilities requested by commercial sector –



- 1). SLF aerial view
- 2). NASCAR/Indy racing teams
- 3). Zero-G Corp.
- 4). Virgin Atlantic's Global Flyer
- takeoff of the around the world record flight

24





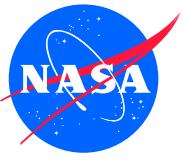
SLF Use Fees

Aircraft ~ \$900 per landing, depending on A/C weight

Race Cars - \$2,000 per day, partial access

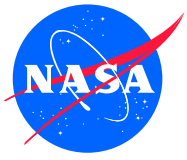


Indy Car - aerodynamic testing at Shuttle Landing Facility



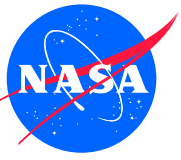
VAB & Launch Pads





FPL Solar Power Facility



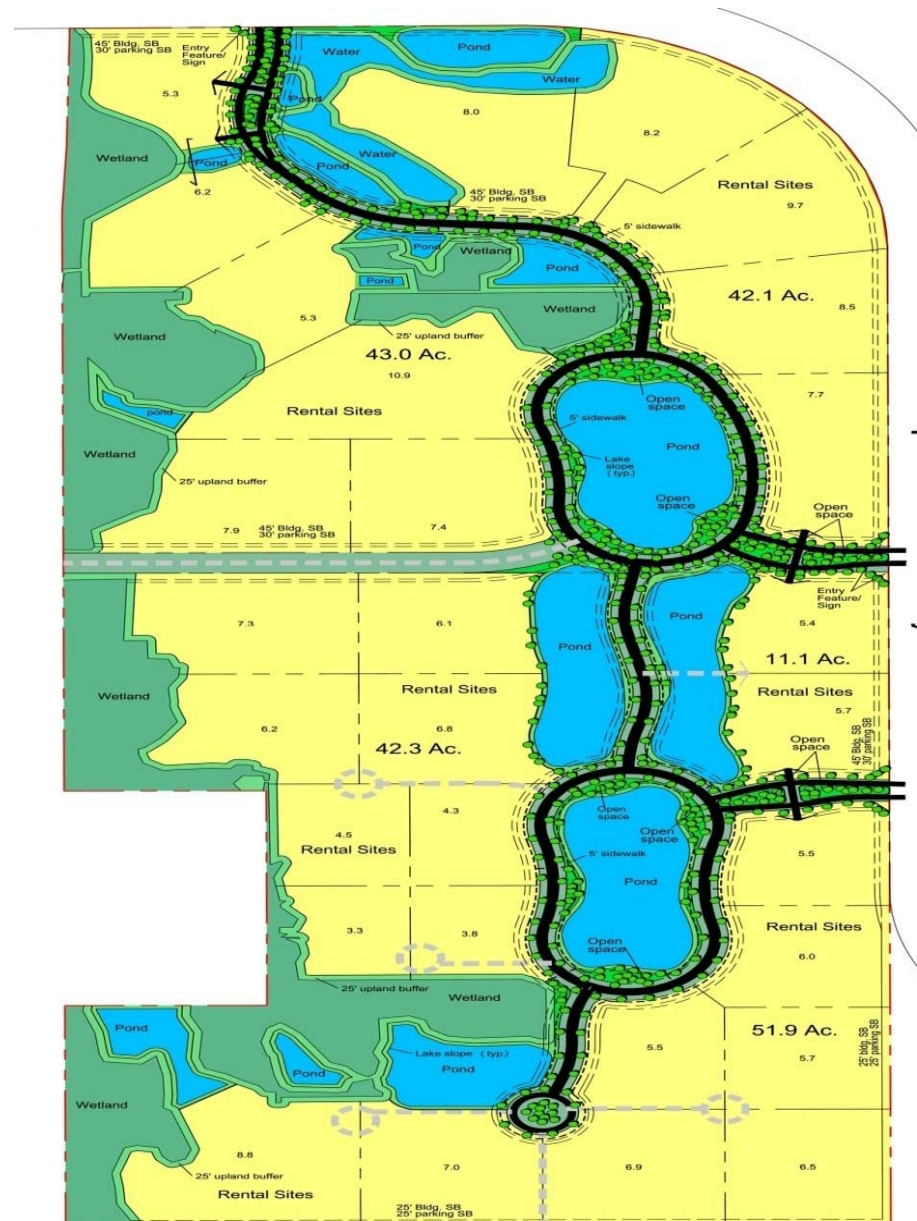


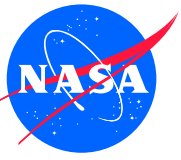
KSC Land

Currently valued at
~ \$60,000 per acre.

Primary leasing:

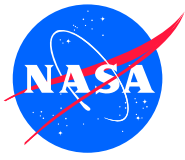
- a) Media/press sites
- b) Cell tower locations
- c) FPL solar arrays





Development has just begun on **Exploration Park**, a 'research/business park' adjacent to Kennedy Space Center, with laboratory and office space available for lease to commercial companies interested in having a business presence and/or other operations near KSC.





KSC Planning & Development Office website:

<http://kscpartnerships.ksc.nasa.gov>

JOHN F. KENNEDY SPACE CENTER

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Success Stories
Frequently Asked Questions (FAQs)
Contact Us

KSC CENTER PLANNING & DEVELOPMENT OFFICE

"Promoting Partnerships . . . Launching Dreams"

Welcome to the "Front Door" for partnership and development with NASA's John F. Kennedy Space Center (KSC). We have a 50-year history serving as our nation's gateway to exploring the universe and look forward to working with you. Our strategic location along Florida's Space Coast within the Merritt Island National Wildlife Refuge is known as the place where nature meets space exploration.

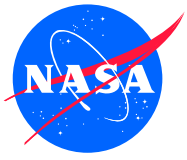
This website is meant to give you a customer-friendly look at the center. It details our general partnership criteria, partnership opportunities, partnership benefits, includes a partnership interest request online form, highlights success stories, answers frequently asked questions and lists our points of contact. We look forward to hearing from you.

WHAT'S NEW?

The newly released [Kennedy Space Center Resource Encyclopedia](#) highlights the facilities, technical capabilities and services of KSC.

MISSION STATEMENT

To develop the world's premier spaceport meeting government and commercial space industry needs, through comprehensive resource planning and the formation of partnerships to ensure the economic vitality of Kennedy Space Center.



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