

MAR 07 2014

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## SENATE RESOLUTION

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COMMENDING AND SUPPORTING THE PACIFIC INTERNATIONAL SPACE CENTER FOR EXPLORATION SYSTEMS' COLLABORATIVE WORK WITH THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AND PRIVATE INDUSTRIES IN THE AREAS OF BASALTIC CONCRETE AND ADDITIVE MANUFACTURING AND REQUESTING COLLABORATION TO EXPLORE OPPORTUNITIES FOR APPLICATIONS OF BASALTIC CONCRETE AND ADDITIVE MANUFACTURING.

1 WHEREAS, this body has been a strong supporter of the  
2 Pacific International Space Center for Exploration Systems since  
3 the Center's inception; and  
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5 WHEREAS, the Pacific International Space Center for  
6 Exploration Systems has gained substantial visibility at the  
7 National Aeronautics and Space Administration and various  
8 international space agencies; and  
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10 WHEREAS, the Pacific International Space Center for  
11 Exploration Systems has entered into research and development  
12 alliances with various private industry partners, including  
13 HoneyBee Robotics, Ontario Drive Gear, and Shackleton Energy;  
14 and  
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16 WHEREAS, as a result of the similarity of Hawaii's volcanic  
17 dust and lava to the regolith on the surface of the Moon and  
18 Mars, the Pacific International Space Center for Exploration  
19 Systems is assuming a global leadership role in the development  
20 of technologies that potentially will support the manufacture of  
21 concrete and other materials that may be used to construct  
22 facilities on other planetary bodies; and  
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24 WHEREAS, despite Hawaii's abundance of basalt in lava  
25 fields that could be used as a sustainable substitute for  
26 conventional concrete, almost all of the concrete used  
27 throughout the State is imported; and  
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29 WHEREAS, current market demand for concrete in Hawaii is  
30 primarily met through cement and asphalt imports, making  
31 research and development to support innovative technologies in



1 basalt concrete composition and delivery an attractive and self-  
2 sustaining alternative to continued reliance on cement and  
3 bitumen imports; and  
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5 WHEREAS, new volcanic basalt and regolith based structural  
6 materials can be created in-situ using sintering, sulfur  
7 binding, polymer binders, thermite self-sintering, and synthetic  
8 biology binders; and  
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10 WHEREAS, new robotic technologies and digital manufacturing  
11 will allow three dimensional additive construction to be  
12 conducted on a large scale; and  
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14 WHEREAS, the Pacific International Space Center for  
15 Exploration Systems is one of four strategic partners that have  
16 been invited by the National Aeronautics and Space  
17 Administration to participate in a two to three year National  
18 Aeronautics and Space Administration funded research program on  
19 three dimensional additive construction using basalt regolith;  
20 now, therefore,  
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22 BE IT RESOLVED by the Senate of the Twenty-seventh  
23 Legislature of the State of Hawaii, Regular Session of 2014,  
24 that this body commends and supports the Pacific International  
25 Space Center for Exploration Systems' work in basaltic concrete  
26 and additive manufacturing, in collaboration with the National  
27 Aeronautics and Space Administration and various private  
28 industries; and  
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30 BE IT FURTHER RESOLVED that the State is requested to  
31 collaborate with the Pacific International Space Center for  
32 Exploration Systems, county agencies, and private industries to  
33 explore opportunities for applications of basaltic concrete and  
34 additive manufacturing to reduce Hawaii's dependence on imported  
35 concrete; and  
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# S.R. NO. 40

1 BE IT FURTHER RESOLVED that certified copies of this  
2 Resolution be transmitted to the Administrator of the National  
3 Aeronautics and Space Administration, Director of the Office of  
4 Aerospace Development, and Chairperson of the Board of Directors  
5 of the Pacific International Space Center for Exploration  
6 Systems.

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9 OFFERED BY:

Will Lygo

