DRAFT by Ella Wise (082716 Will substitute the final draft via link to it once it's published. <<TITLE??>> Biophilia – The DNA for Resilient, Sustainable, and Human 21st Century Cities OR

Should Cities be "Green" with Nature?

"We need nature in our lives more than ever today, and as more of us are living in cities it must be urban nature. Biophilic Cities are cities that contain abundant nature; they are cities that care about, seek to protect, restore and grow this nature, and that strive to foster deep connections and daily contact with the natural world. Nature is not something optional, but absolutely essential to living a happy, healthy and meaningful life." (The Biophilic Cities Network: <u>http://biophiliccities.org</u>).

There are approximately 18,000 people per square mile in San Francisco and 20,000 people per square mile in Singapore. Both are internationally-recognized examples of compact cities that are "green" with climate-friendly design and resource-efficient policies, but are they "green" with nature? How does San Francisco share its 7 mile by 7 mile square grid with the natural world? How has Singapore shifted from a "Garden City" to a "City in a Garden"?

During the week of May 9, 2016, Khee Poh Lam, the next <<isn't he Dean now, THIS year?>> Dean of the School of Design and Environment at the National University of Singapore, and members of the Carnegie Mellon University–Building and Construction Authority (CMU-BCA) Executive Program, a partnership aimed at supporting sustainability leaders in Singapore, visited the U.S. from Singapore for a one-week tour to study Biophilic Design and Big Data Analytics. The Program began at Carnegie Mellon University and ended with a two day field trip to the San Francisco Bay Area.

Singapore is already an international leader in urban sustainability and was one of the first members of the <u>Biophilic</u> <u>Cities Network</u>. An example of Singapore's boldly biophilic policies is the <u>Skyrise Greenery Incentive Scheme</u>, in which Singapore's National Parks Board will fund 50 percent of installation costs of green roofs, rooftop gardens, and green walls. As part of the last day of the Executive Program, Khee Poh Lam asked Scott Edmondson of the San Francisco Planning Department, another early member of the Biophilic Cities Network, if he would be interested in assembling half-day workshop on biophilic urban planning to add the "city" scale to the week's program that had focused on biophilic design at the "building" scale. Scott lead the workshop (URL) co-hosted by Kirstin Weeks at Arup's downtown office, that included a tour of rooftop gardens and green buildings downtown and a series of presentations by representatives of a variety of departments on their latest work.

For the Study Group, the Friday began at the Nature Conservancy's SF Headquarters office at 201 Mission Street, featuring a remarkable example of occupant centric biophilic design that raised employee productivity to the tune of USD \$270K savings per year. Afterwards, the tour began at the garage roof-top garden of 100 First St, which is chock-full of impressive water features (including a water garden) and sculptured grass areas--a great place to wind down and enjoy a lunch break. Next up--the lobby of Foundry Square III at 505 Howard Street featuring two adjoining living walls and two floor-to-ceiling glass walls, allowing passersby to gaze through to the 12,500 plants inhabiting the space. The final stop was the plaza next to 555 Mission Street. It stands out thanks to its funky Ugo Rondinone sculptures and lovely green wall, and also features a towering art installation by Jonathan Borofsky.



Source: Singapore National Parks Skyrise Greenery, Bukit Timah Community Club.

~500 word limit

Once installed and rested in Arup's conference room, the presentations began with Timothy Beatley "skyping in" from the University of Virginia. He described the research that <u>launched the Biophilic Cities Network</u> and some recent initiatives (<u>http://biophiliccities.org</u>). The Planning Department presented their <u>Living Alleys Program</u>, empowering community members to "humanize" alley street space in their neighborhoods with community-led design, financing, and building of multipurpose public spaces. Peter Brastow, the City's Biodiversity Coordinator (<u>http://sfenvironment.org/buildings-environments/natural-san-francisco/the-biodiversity-program</u>), pointed out the thriving wildness all around us—there are 56 species of native bees in one of the parks within the city!

Rosey Jencks from the San Francisco Public Utilities Commission discussed the City's complex stormwater system, in which a combined stormwater and sewer system can lead to flooding overflow during intense storm events. Rosey also described the PUC's low-impact design program, such as rain harvesting and constructed wetlands that reduce stormwater loads. This program is not a luxury, but an important strategy promising great public health and civic benefits (<u>http://sfwater.org/index.aspx?page=667)</u>. Alexej Goehring from Arup presented findings from their study of the energy and heat benefits of vertical green walls in different cities around the globe (<u>http://doggerel.arup.com/living-walls-and-green-roofs/</u>). When scaled, green walls and roofs can reduce urban heat

island effect. Unfortunately, we ran out of time for Anne Braske to present SF's <u>Green Roof Program</u> or for Scott Edmondson to present SF Planning's <u>Biophilic</u> <u>Planning program</u>.

All in all, this one-day visit was just a snapshot of the rich array of strategies, lessons learned, and new ideas that Singapore and San Francisco, both members of the Biophilic Cities Network, have to share with each other, fellow BCN City members, and cities around the world who are interested in creating the next-generation of resilient, sustainable, and human cities needed for 21st century success.



Source: San Francisco Department of the Environment. May 2016.

A Biophilically Reimagined City Hall Public Realm-San Francisco



Source: San Francisco Public Utilities Commission, May 2016.