CITY COUNCIL STAFF REPORT

DATE: July 2, 2014 CONSENT AGENDA

SUBJECT: APPROVE CHANGE ORDER WITH CHEVRON ENERGY SOLUTIONS FOR ADDITIONAL CONTROLS IN THE I-HUB BUILDING AND REPLACEMENT CONTROLS FOR THE AIRPORT TERMINAL

FROM: David H. Ready, City Manager

BY: Special Projects Coordinator

SUMMARY

The proposed action would be to approve Change Order #2 to Contract A6375 with Chevron Energy Solutions Company for additional air conditioning controls in the I-Hub building, re-connecting the I-Hub to the Cogen Plant and replacement controls for the Airport Terminal.

RECOMMENDATION:

1. Approve Change Order #2 to Contract A6375 with Chevron Energy Solutions Company in the amount of $119,273, for air conditioning controls in the I-Hub Building and $376,959 for replacement controls at the Airport Terminal.

2. Authorize the Finance Director to make required budget adjustments to authorize the use of the Sustainability Unallocated Program Funds to cover 50% of the cost of the I-Hub portion of this change order with the remaining 50% to come from General Fund Reserves and the necessary budget transfer to allocate the Airport's funds.

3. Authorize the City Manager to execute all necessary documentation.

ITEM NO. 5A

STAFF ANALYSIS:

I-Hub: At the time that Chevron Energy Solutions (CES) was hired to conduct the initial energy audit/study of City facilities the I-Hub building was leased to the County of Riverside and it was not included in the study. When the I-Hub was established the building was remodeled and new air conditioning/heating systems were installed but funds ran out before adequate controls were installed in the building. The building is not currently served by chilled and hot water from the cogeneration plant.

Change Order No. 2, related to the I-Hub would do three things; first, controls would be installed on the multi-zone air conditioning equipment which will allow for areas of the building to be shut off when not in use. Second, connection to cogen would be re-established and automated controls and metering would be installed on the cogeneration piping coming into the building so that when excess hot and cold water is available it can be automatically routed to this building. Third, a touch screen computer would be installed in the building so maintenance personnel could make on-site adjustments to the controls as desired. It is estimated that the control portion of the work should save approximately $7,000 to $9,000 annually, and the cogen controls/metering will allow for use of chilled and hot water that will otherwise not be utilized from the cogen plant.

Staff requested that CES provide costs to automate the building, automate the connection to cogen and to provide for local touch screen computer control. The negotiated costs from CES totaled $119,273 and are comparable to other quotes previously reviewed by Facilities Maintenance.

Airport: The Airport Terminal building has several different controls systems as the facility has grown over time. The primary control system for the building is a third generation Siemens system which is old and the Airport has been advised that Siemens can no longer support it unless the airport carries out an upgrade of the system at a cost of $220,000. The Siemens upgrade will only upgrade the main controls and the software, providing nothing new in the remainder of the building; basically upgrading and investing in an outdated system. The other difficulty with utilizing Siemens equipment is that they must maintain it whereas the proposed system from Chevron is one that City Staff can maintain and obtain replacement parts directly from the manufacturer. The Chevron proposal will result in a completely new control system that is user friendly; total cost of $376,959.

I-Hub: At the time that Chevron Energy Solutions (CES) was hired to conduct the initial energy audit/study of City facilities the I-Hub building was leased to the County of Riverside and it was not included in the study. When the I-Hub was established the building was remodeled and new air conditioning/heating systems were installed but funds ran out before adequate controls were installed in the building. The building is not currently served by chilled and hot water from the cogeneration plant.

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FISCAL IMPACT:

Staff prepared a request of Sustainability for the funding of the I-Hub work and presented that request to the Commission on June 17, 2014. The Commission declined to provide for the funding by a vote of 9-1 expressing concern over a dwindling fund balance. Staff recommends that the Change Order be approved and that the I-Hub portion be funded 50% from Sustainability Unallocated Program Funds, account 138-1270-42691, and 50% from General Fund Reserves,. The Airport will fund its share from account 416-6501-5000, Airport Unscheduled Capital Projects.

Allen F. Smoot, Special Projects Coordinator

David H. Ready, City Manager

Attachments:
1. Change Order

CHANGE ORDER NO. 2

PROJECT TITLE: City Wide Energy Conservation Measures Project

CONTRACT: Energy Services Contract (CU 1361)

CONTRACT NO.: A6375

CONTRACT DATE: July 29, 2013

CONTRACTOR: Chevron Energy Solutions Company

The following changes are hereby made to the Contract:

#	Item	Cost (Credit)
1.	Proposed CR#5, IHUB Chilled water Change Over Controls (See attached documentation)	$58,066.00
2.	Proposed CR#14, IHUB Start/Stop Controls (See attached documentation)	$56,807.00
3.	Proposed CR#14a, IHUB Touchscreen, alt. 1 (See attached documentation)	$ 4,400.00
4.	Proposed CR#7, Airport Terminal DDC Controls (See attached documentation)	$376,959.00
	Total	**$496,232.00**

Justification:

Item #1: The IHUB building was not included in the original Chevron study as at the time it was leased to the County. Now as a City facility it is desirable to have it connected to Cogen chilled water to take advantage of the cheaper available energy. This change Order would provide the necessary controls and valves for this to operate.

Item #2: Currently there are no start/stop controls on the equipment at IHUB and therefore equipment runs when there is no one present, this will add controls.

Item #3: Adds a touchscreen computer at IHUB for making local setting changes.

Item #4: Provides for an completely new control system for the Airport Terminal Building, replacing a system that parts can no longer be obtained for.

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CHANGE TO CONTRACT AMOUNT

Original Contract Amount:	$17,507,842
Current Contract Amount, as adjusted by previous Change Orders:	$17,507,842
The Contract Amount due to this Change Order will be changed by:	$ 496,232 add
Contract Amount due to this Change Order will be:	$18,004,074

CHANGE TO CONTRACT TIME

The Contract Time is not affected by this Change Order.

Approvals Required:

To be effective, this Change Order must be approved by both Chevron ES and City, unless otherwise permitted under the terms of the Contract.

Recommended by _____ date _____
City's Representative

Ordered by _____ date _____
City Manager

ATTEST: _____ date _____
City Clerk

Accepted by _____ date _____
Chevron Energy Solutions Company

Chevron ES acknowledges and agrees, on behalf of Chevron ES, all subcontractors and all suppliers, that, except as provided above, the stipulated compensation provided for in this Change Order includes payment for all work contained in this Change Order, plus all payments for interruption of schedules, incremental extended overhead costs, acceleration costs, delay and all impact, ripple effect or cumulative impact on all other work arising out of, or related to, the work that is the subject of this Change Order. In addition, Chevron ES agrees that this Change Order comprises the total compensation due Chevron ES, and all subcontractors and all suppliers, for the work or change defined in this Change Order, including all impacts arising out of or related to this Change Order, including all impacts arising out of or related to this Change Order, except for the additional time-related issues noted above, if required.

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Barry Kirschenbaum
Project Manager

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May 15, 2014

Mr. Allen Smoot
Special Project Coordinator
City of Palms Springs
3200 E. Tahquitz Canyon Way
Palm Springs, CA 92262

Re: CES PROJECT DWCES-32261-441 / ESC # CU-1361 / COPS Contract # A6375
Rev - CO # 5 **(IHUB Building – Chilled Water Changeover Control):**

SCOPE OF SERVICES:

(IHUB Building – Chilled Water Changeover Control):
This scope includes control for CHW changeover from Co-Gen to the building chiller.

1. Furnish and install the necessary amount of new I/O programmable controllers to control the one (1) existing chiller system.
2. Furnish and install one (1) new chiller system changeover control valve and one (1) new chiller system minimum flow bypass valve.
3. Install Onicon Model 10 BTU meter and Flowmeter for chilled water.
4. Furnish and install the necessary Modbus communication cabling to interface with the one (1) chiller system BTU meter.
   Provide control cabling and control conduit (all conduit to be EMT type); where necessary.
5. Utilize all existing conduit paths & cabling where practical.
6. Create customized graphic pages.
7. All required chilled water piping and pipe insulation.

Chiller System (Typical of One)
Inputs Outputs
CHW Supply Temperature Chiller Enable
CHW Return Temperature CHW Pump Start/Stop
CHW Pressure Differential CHW Pump VFD Speed Signal
Chiller Status CHW Changeover Control Valve Signal
CHW Pump Status Co-Gen CHW Return Isolation Control Signal
CHW Pump VFD Fault
Modbus Interface Data
CHW System BTU Data

Total cost..... ..... $ 58,066.00

Respectfully,

Barry Kirschenbaum
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Project Manager

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Re: CES PROJECT DWCES-32261-441 / ESC # CU-1361 / COPS Contract # A6375
CO # 14 / # 14A **(IHUB Building – Building HVAC DDC Controls Motor Controls Only and Boiler Interface):**

SCOPE OF SERVICES:

(IHUB Building – Building HVAC DDC Controls Motors):

This scope includes On/Off control only for four (4) existing MZU units and one (1) boiler system.
Installation of HW BTU Meter

Scope:

1. Furnish and install the necessary amount of new I/O programmable controllers to provide On/Off control the (4) existing MZ Units and (1) boiler system.
2. Furnish and install one (1) new boiler hot water bypass control valve and immersion wells for the boiler system.
3. Furnish and install the necessary Modbus communication cabling to interface with the one (1) HW system BTU meter.
4. Install one (1) Onicon BTU meter, sensors and flow meter.
5. Provide control cabling and control conduit (all conduit to be EMT type)
6. Create customized graphic pages. Provide the labor to program and test the new controls.

System Points:

MZU-A (Typical of One)
Inputs Outputs
Supply Fan Status
Supply Fan Start/Stop

MZU-B (Typical of One)
Inputs Outputs
Supply Fan Status
Supply Fan Start/Stop

MZU-C (Typical of One)
Inputs Outputs
Supply Fan Status
Supply Fan Start/Stop
Exhaust Fan Status
Exhaust Fan Start/Stop

MZU-D (Typical of One)
Inputs Outputs
Supply Fan Status
Supply Fan Start/Stop
Exhaust Fan Status
Exhaust Fan Start/Stop

HW System
Inputs Outputs
HW Temperature to Building
Boiler HW Bypass Control Valve Signal
HW Temperature leaving Building
Boiler: HW Out Temperature
Boiler: HW Return Temperature
Boiler Status

Modbus Interface Data
Inputs Outputs
HW System BTU Data

Programming and engineering

Total cost..... ..... $ 56,807.00

Alt add # 1: CO # 14A
Add $ 4,400.00 for new Touch screen to be interfaced into DDC control panel for local display.
Currently the change over for chilled water has a control panel with no local display. This will be added to that control panel.

Respectfully,

Barry Kirschenbaum
Barry Kirschenbaum
Project Manager

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Re: CES PROJECT DWCES-32261-441 / ESC # CU-1361 / COPS Contract # A6375
Rev 1 CO # 7 **(Airport HVAC DDC Controls):**

SCOPE OF SERVICES:

(Airport Building – Building HVAC DDC Controls / City of Palm Springs – Airport Retrofit (Schneider-Electric Energy Management System)):

This scope includes tie in to existing DDC controllers and adding new hardware where required for proper operation and control. This proposal is based upon multiple site walks at the airport with City Personnel. The below list was compiled through site walks and information taken off of the existing computer that houses the Siemens controls.

Scope:

The proposed EMS control system is an open-protocol based system capable of communicating Lonworks/BACnet/Modbus protocols and will tie into the new city wide EMS frontend system to expand the Schneider-Electric StruxureWare Control System for the City of Palm Springs airport facility..

Scope:

- Remove the existing Siemens control system and retrofit with a new Schneider-Electric EMS control system and tie seamlessly into the city wide frontend system.
- Furnish and install one (1) Schneider-Electric Workstation Professional edition host software suite.
- Furnish and install one (1) new Dell Desktop computer with monitor, keyboard and mouse. The computer will be sized to meet the Schneider-Electric EMS host software.
- Furnish and install new Schneider-Electric controllers for the following units:

  - Chiller Rm: CH-1, CH-2, CHWP-1, CHWP-2, CHWP-4 & CHWP-5
  - Cooling Tower Yard: CT-1, CT-2, CWP-1, CWP-2, B-1, HWP-1 & HWP-2
  - Mech Rm B-113: MZ-1, AH-1, AHU-4, RA-7 & EF-1
  - Mech Rm C-109: MZ-2, AH-2, RA-4 & RA-3
  - Mech Rm Ticketing: AH-3
  - Mech Rm B-233: MZ-3, RA-5 & EF-2
  - Mech Rm B-205: MZ-4
  - Bldg RJ: AHU-1, AHU-2, AHU-3, EF-1, CHW Booster Pump & HW Booster Pump
  - PHASE-II: AHU-1, AHU-2, TX-1 & TX-2
  - TSA Mech Rm: AHU-1
  - Twenty-Nine (29) Fan Coil Units
  - Seventy-Five (75) VAV boxes
  - Two (2) Evap Cool

- Utilize all existing end devices (sensors, transducers, actuators, control valves, etc.) where practical for the new controls.
- Utilize all existing enclosures to mount the new controllers in.
- Utilize all existing control cabling and conduit paths.
- Program and test the new Schneider-Electric control system.
- Create new system graphic pages.

EMS Control System Control / Monitoring Points:

CHW System Point **CH-1 / CH-2 / CHWP-1 & 2 / CHWP-5 & 6**

Inputs	Outputs
CH-1: CHW Supply Temp (NEW SENSOR)	CH-1 : Enable (EXISTING DEVICE)
CH-1: CW In Temp (NEW SENSOR)	
CH-1: CHW Press Diff (EXISTING SENSOR)	
CH-1: Alarm Contacts (EXISTING POINT)	
CH-1: CHW Iso Valve Feedback (EXISTING POINT)	CH-1: CHW Iso Valve Control Signal (V-3) (EXISTING POINT)
CH-1: CW Iso Valve Feedback (EXISTING POINT)	CH-1: CW Iso Valve Control Signal (V-4) (EXISTING POINT)
CH-2: CHW Supply Temp (NEW SENSOR)	CH-2 : Enable (EXISTING DEVICE)
CH-2: CW In Temp (NEW SENSOR)	
CH-2: CHW Press Diff (EXISTING SENSOR)	
CH-2: Alarm Contacts (EXISTING POINT)	
CH-2: CHW Iso Valve Feedback (EXISTING POINT)	CH-2: CHW Iso Valve Control Signal (V-1) (EXISTING POINT)
CH-2: CW Iso Valve Feedback (EXISTING POINT)	CH-2: CW Iso Valve Control Signal (V-2) (EXISTING POINT)
Common CHW Return Temp (NEW SENSOR)	CHW Iso Valve Control Signal (CV-11) (EXISTING DEVICE)
CHW Return Temp from (E) Bldg (NEW SENSOR)	CHW Iso Valve Control Signal (CV-12) (EXISTING DEVICE)
CHW Supply Temp to (N) Bldg (NEW SENSOR)	CHW Bypass Valve Control Signal (CV-8) (EXISTING DEVICE)
CHW Return Temp from (N) Bldg (NEW SENSOR)	CoGen CHW Iso Valves Control Sig. (CV-9 & 10) (EXISTING DEVICES)
CHW Supply Temp to CoGen (NEW SENSOR)	
CHW Return Temp from CoGen(NEW SENSOR)	
CHW Press Diff to (N) Bldg (EXISTING SENSOR)	
CHW Press Diff to CoGen (EXISTING SENSOR)	
CHW Flow from CoGen (EXISTING SENSOR)	
CHW Flow from Chillers (EXISTING SENSOR)	

CHWP-1: Status (EXISTING DEVICE)	CHWP-1: Start/Stop (EXISTING DEVICE)
CHWP-2: Status (EXISTING DEVICE)	CHWP-2: Start/Stop (EXISTING DEVICE)
CHWP-4: Status (EXISTING DEVICE)	CHWP-4: Start/Stop (EXISTING DEVICE)
CHWP-4: VFD Fault Sig. (EXISTING POINT)	CHWP-4: VFD Speed Sig. (EXISTING POINT)
CHWP-5: Status (EXISTING DEVICE)	CHWP-5: Start/Stop (EXISTING DEVICE)
CHWP-5: VFD Fault Sig. (EXISTING POINT)	CHWP-5: VFD Speed Sig. (EXISTING POINT)

CW System Points **CT-1 / CT-2 / CWP-1 & 2**

Inputs	Outputs
CW Supply Temperature (NEW SENSOR)	CW Bypass Valve Control Signal (V-6) (EXISTING DEVICE)
CW Return Temperature (NEW SENSOR)	
CT-1: Fan Status (EXISTING DEVICE)	CT-1: Fan HI Speed Enable (EXISTING DEVICE)
	CT-1: Fan LO Speed Enable (EXISTING DEVICE)
	CT-1: CW Iso Valve Control Signal (V-5) (EXISTING DEVICE)
CT-2: Fan Status (EXISTING DEVICE)	CT-2: Fan HI Speed Enable (EXISTING DEVICE)
	CT-2: Fan LO Speed Enable (EXISTING DEVICE)
	CT-2: CW Iso Valve Control Signal (V-6) (EXISTING DEVICE)
CWP-1: Status (EXISTING DEVICE)	CWP-1: Start/Stop (EXISTING DEVICE)
CWP-2: Status (EXISTING DEVICE)	CWP-1: Start/Stop (EXISTING DEVICE)

HW System Points **B-1 / HWP-1 & 2**

Inputs	Outputs
B-1: HW Return Temperature (NEW SENSOR)	B-1: Boiler Enable (EXISTING DEVICE)
B-1: Alarm Contacts (EXISTING POINT)	B-1: HW Iso Valve Control Signal (ACV-5) (EXISTING DEVICE)
HW Supply Temp to Bldg-1 (NEW SENSOR)	HW PRV Valve Control Signal (ACV-6) (EXISTING DEVICE)
HW Return Temp from Bldg-1 (NEW SENSOR)	HW Bypass Valve Control Signal (ACV-1) (EXISTING DEVICE)

HW Pressure Differential to Bldg-1 (EXISTING DEVICE)	
HW Supply Temp to Bldg-2 (NEW SENSOR)	
HW Return Temp from Bldg-2 (NEW SENSOR)	
HW Supply Temp from CoGen (NEW SENSOR)	
HW Return Temp to CoGen (NEW SENSOR)	
CoGen HW Pressure Differential (EXISTING DEVICE)	
HW Return Flow to CoGen (EXISTING DEVICE)	
HWP-1: Status (EXISTING DEVICE)	HWP-1: Start/Stop (EXISTING DEVICE)
HWP-2: Status (EXISTING DEVICE)	HWP-1: Start/Stop (EXISTING DEVICE)

MZ-1 Unit System Points **MZ-1**

Inputs	**Outputs**
Space Temperature Sensor (Typ of 4) (NEW SENSORS)	CD Damper Motor Control Signal (Typ of 4) (EXISTING DEVICES)
	HD Damper Motor Control Signal (Typ of 4) (EXISTING DEVICES)
Cold Deck Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Hot Deck Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	HW Valve Control Signal (EXISTING DEVICE)
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Return Fan Status (EXISTING DEVICE)	Return Fan Start/Stop (EXISTING DEVICE)

MZ-2 Unit System Points **MZ-2 / RA-4**

Inputs	**Outputs**
Space Temperature Sensor (Typ of 6) (NEW SENSORS)	CD Damper Motor Control Signal (Typ of 6) (EXISTING DEVICES)
	HD Damper Motor Control Signal (Typ of 6) (EXISTING DEVICES)
Cold Deck Temperature (NEW	Economizer Damper Control Signal

SENSOR)	(EXISTING DEVICES)
Hot Deck Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	HW Valve Control Signal (EXISTING DEVICE)
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
RA-4: Status (EXISTING DEVICE)	RA-4: Start/Stop (EXISTING DEVICE)

MZ-3 Unit System Points **MZ-3 / RA-5**

Inputs	**Outputs**
Space Temperature Sensor (Typ of 4) (NEW SENSORS)	CD Damper Motor Control Signal (Typ of 4) (EXISTING DEVICES)
	HD Damper Motor Control Signal (Typ of 4) (EXISTING DEVICES)
Cold Deck Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Hot Deck Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	HW Valve Control Signal (EXISTING DEVICE)
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
RA-5: Status (EXISTING DEVICE)	RA-5: Start/Stop (EXISTING DEVICE)

MZ-4 Unit System Points **MZ-4**

Inputs	**Outputs**
Space Temperature Sensor (Typ of 5) (NEW SENSORS)	CD Damper Motor Control Signal (Typ of 5) (EXISTING DEVICES)
	HD Damper Motor Control Signal (Typ of 5) (EXISTING DEVICES)
Cold Deck Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Hot Deck Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	HW Valve Control Signal (EXISTING DEVICE)
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)

Bldg-1: AH-1 Restaurant Unit **AH-1**

Inputs		Outputs	
Space Temperature Sensor SENSOR)	(NEW	Supply Fan Start/Stop	(EXISTING DEVICE)
Supply Air Temperature SENSOR)	(NEW		
Supply Fan Status DEVICE)	(EXISTING		

Bldg-1: AH-2 Zone D Area **AH-2 / RA-3**

Inputs		Outputs	
Supply Air Temperature SENSOR)	(NEW	Economizer Damper Control Signal (EXISTING DEVICES)	
Supply Air Static Pressure SENSOR)	(EXISTING	CHW Valve Control Signal (EXISITING DEVICE)	
Bldg Pressure SENSOR)	(EXISTING		
Filter Status	(EXISTING DEVICE)		
Supply Fan Status DEVICE)	(EXISTING	Supply Fan Start/Stop	(EXISTING DEVICE)
RA-3: Status DEVICE)	(EXISTING	RA-3: Start/Stop	(EXISTING DEVICE)

Bldg-1: AH-3 Ticketing Area **AH-3**

Inputs		Outputs	
Supply Air Temperature SENSOR)	(NEW	Economizer Damper Control Signal (EXISTING DEVICES)	
Supply Air Static Pressure SENSOR)	(EXISTING	CHW Valve Control Signal (EXISITING DEVICE)	
Bldg Pressure SENSOR)	(EXISTING		
Filter Status	(EXISTING DEVICE)		
Supply Fan Status DEVICE)	(EXISTING	Supply Fan Start/Stop	(EXISTING DEVICE)

Bldg-1: AH-4 Baggage Area **AH-4 / RA-7**

Inputs		Outputs	
Supply Air Temperature SENSOR)	(NEW	Economizer Damper Control Signal (EXISTING DEVICES)	
Supply Air Static Pressure SENSOR)	(EXISTING	CHW Valve Control Signal (EXISITING DEVICE)	
Bldg Pressure SENSOR)	(EXISTING		
Filter Status	(EXISTING DEVICE)		
Supply Fan Status DEVICE)	(EXISTING	Supply Fan Start/Stop	(EXISTING DEVICE)
RA-7: Status DEVICE)	(EXISTING	RA-7: Start/Stop	(EXISTING DEVICE)

Bldg-RJ: AH-1 **AH-1**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Return Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	
Supply Air Static Pressure (EXISTING SENSOR)	
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Supply Fan VFD Fault Signal (EXISTING DEVICE)	Supply Fan VFD Speed Signal (EXISTING DEVICE)
Return Fan Status (EXISTING DEVICE)	Return Fan Start/Stop (EXISTING DEVICE)
Return Fan VFD Fault Signal (EXISTING DEVICE)	Return Fan VFD Speed Signal (EXISTING DEVICE)

Bldg-RJ: AH-2 **AH-2**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Return Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	
Supply Air Static Pressure (EXISTING SENSOR)	
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Supply Fan VFD Fault Signal (EXISTING DEVICE)	Supply Fan VFD Speed Signal (EXISTING DEVICE)
Return Fan Status (EXISTING DEVICE)	Return Fan Start/Stop (EXISTING DEVICE)
Return Fan VFD Fault Signal (EXISTING DEVICE)	Return Fan VFD Speed Signal (EXISTING DEVICE)

Bldg-RJ: AH-3 **AH-3**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Mixed Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)

Phase-II: AH-1 **AH-1**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Return Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	
Return Air Co2 (EXISTING SENSOR)	
OS Air Co2 (EXISTING SENSOR)	
Supply Air Static Pressure (EXISTING SENSOR)	
Bldg Static Pressure (EXISTING SENSOR)	
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Supply Fan VFD Fault Signal (EXISTING DEVICE)	Supply Fan VFD Speed Signal (EXISTING DEVICE)
Return Fan Status (EXISTING DEVICE)	Return Fan Start/Stop (EXISTING DEVICE)
Return Fan VFD Fault Signal (EXISTING DEVICE)	Return Fan VFD Speed Signal (EXISTING DEVICE)

Phase-II: AH-2 **AH-2**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Return Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	
Return Air Co2 (EXISTING SENSOR)	
Supply Air Static Pressure (EXISTING SENSOR)	
Bldg Static Pressure (EXISTING SENSOR)	
Filter Status (EXISTING DEVICE)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Supply Fan VFD Fault Signal (EXISTING DEVICE)	Supply Fan VFD Speed Signal (EXISTING DEVICE)
Return Fan Status (EXISTING DEVICE)	Return Fan Start/Stop (EXISTING DEVICE)
Return Fan VFD Fault Signal (EXISTING DEVICE)	Return Fan VFD Speed Signal (EXISTING DEVICE)

TSA: AH-1 **AH-1**

Inputs	Outputs
Supply Air Temperature (NEW SENSOR)	Economizer Damper Control Signal (EXISTING DEVICES)
Return Air Temperature (NEW SENSOR)	CHW Valve Control Signal (EXISITING DEVICE)
Mixed Air Temperature (NEW SENSOR)	
Supply Air Static Pressure (EXISTING SENSOR)	
Supply Fan Status (EXISTING DEVICE)	Supply Fan Start/Stop (EXISTING DEVICE)
Supply Fan VFD Fault Signal (EXISTING DEVICE)	Supply Fan VFD Speed Signal (EXISTING DEVICE)

VAV Boxes (Typical of Seventy-Five)

Inputs	Outputs
Space Temperature Sensor (NEW SENSOR)	Damper Position (NEW DEVICE)
Supply Air Temperature (Typical for External Zones Only) (NEW SENSOR)	HW Reheat Valve Control Signal (Typical for External Zones Only) (EXISTING DEVICE)
CFM% (NEW DEVICE)	

Fan Coil Units (Typical of Thirty)

Inputs	Outputs
Space Temperature Sensor (NEW SENSOR)	Damper Position (NEW DEVICE)
Supply Air Temperature (NEW SENSOR)	Fan Enable (EXISTING DEVICE)
Fan Status (EXISTING DEVICE)	CHW Reheat Valve Control Signal (EXISTING DEVICE)
	HW Reheat Valve Control Signal (EXISTING DEVICE)

Evap Coolers (Typical of Two) **EC-1 & EC-2**

Inputs	Outputs
Space Temperature Sensor (NEW SENSOR)	Damper Position (NEW DEVICE)
Fan Status (EXISTING DEVICE)	Fan Enable (EXISTING DEVICE)
Direct Cooling Pump Status (EXISTING DEVICE)	Direct Cooling Pump Enable (EXISTING DEVICE)

Exhaust Fans & Toilet Fans **EF-1 / EF -2 / EF-3 / EF-4 / TX-1 / TX-2**

Inputs	Outputs
EF/TX Status (EXISTING DEVICE)	EF/TX Start/Stop (EXISTING DEVICE)

Concourse Door Points (Typical for 5 Doors)

Inputs	Outputs
Concourse Door Closed Contacts	

(EXISTING POINTS / DEVICE)	
Concourse Door in Auto Contacts (EXISTING POINTS / DEVICE)	
Concourse Door in Manual Contacts (EXISTING POINTS / DEVICE)	

Power Monitoring Points

Inputs	Outputs
Bldg-1 DEM.M Power Meter (EXISTING POINTS / DEVICE)	
Bldg-1 DEM.J Power Meter (EXISTING POINTS / DEVICE)	
Bldg-2 MSA Power Meter (EXISTING POINTS / DEVICE)	
Bldg-2 MSB Power Meter (EXISTING POINTS / DEVICE)	

Also Included:

- Provide forty (40) hours of system training.
- System warranty (1-year included) after system start-up and commissioning.

Clarifications:

- We will require at minimum (13) external static TCP/IP network connection, IP addresses with internet capabilities for the new controllers at each location installed. This scope will need to be provided by the City's IT dept/contractor.
- We will utilize all existing end devices, enclosures, control cabling, conduit paths, etc. for the new system controllers.
- All labor will be performed on normal business hours (Monday – Friday / 7:00am – 4:00pm). If after hour labor is required it will be at an additional cost.
- If any other controls are required that are not a part of this scope and that are found while doing this work in the field, CES will immediately notify City of Palm Springs and issue a cost for any added work not identified in this proposal.

Total cost..... $ 376,959.00

Respectfully,

Barry Kirschenbaum
Barry Kirschenbaum
Project Manager