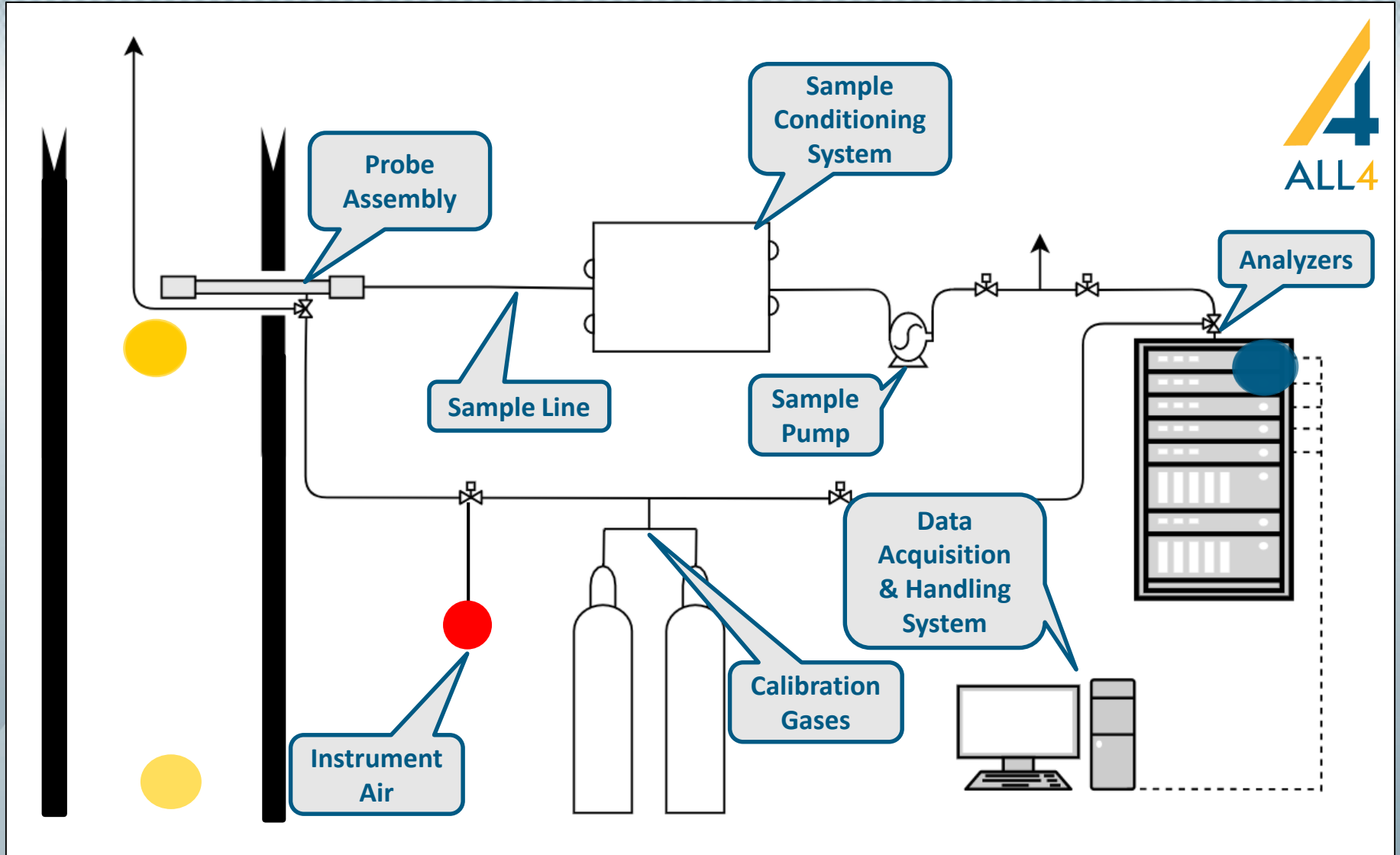


Impacts of U.S. EPA Region 6 Guidance on CMS Downtime and Data Calculations

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Typical CMS Diagram



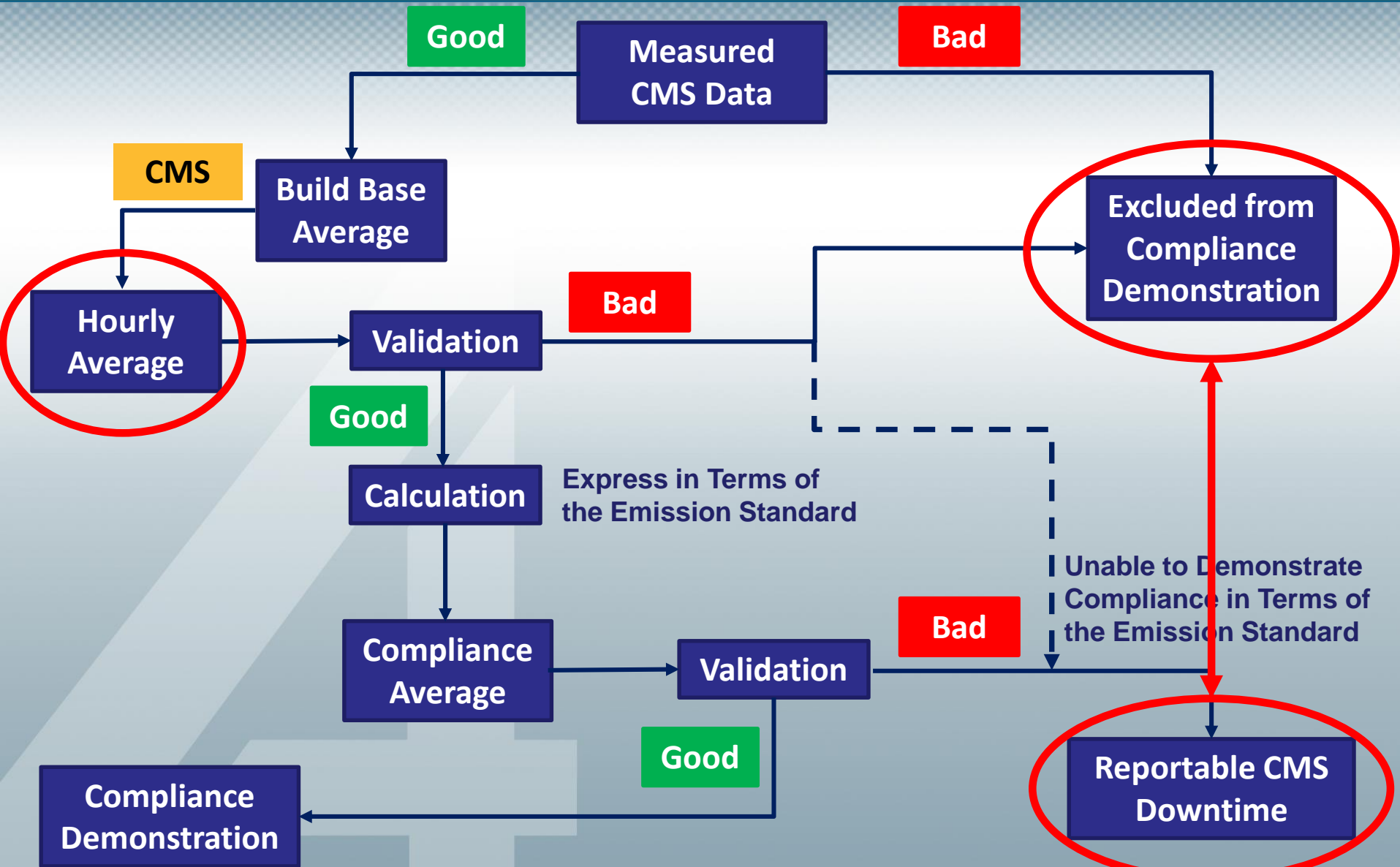
CMS Sampling Frequency

- 40 CFR §60.13 (e) – ...all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows: [40 CFR §60.13 (e)(1)&(2)]
- 40 CFR §60.13 (e)(2) - All continuous monitoring systems shall complete a *minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.*

CMS Downtime

- **40 CFR §60.7 (b)** – ...Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or **any periods during which a continuous monitoring system or monitoring device is inoperative.**

Compliance Demonstration

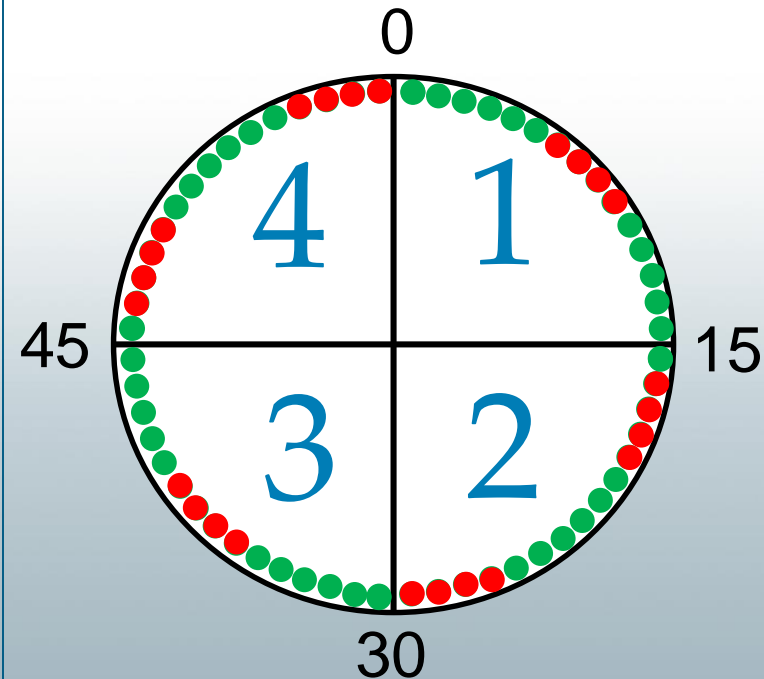


1-hour Block Average Validation

- Full Operating Hour [§60.13(h)(2)(i)]
- Partial Operating Hour [§60.13(h)(2)(ii)]
- Maintenance or Quality Assurance Hour [§60.13(h)(2)(iii)]

1-hour Block Average Validation

- ...1-hour averages shall be computed as follows...for a full operating hour (any clock hour with 60 minutes of unit operation), at least four valid data points are required to calculate the hourly average, i.e., one data point in each of the 15-minute quadrants of the hour. [§60.13(h)(1) & (h)(2)(i)]



U.S. EPA Region 6 Guidance

- April 18, 2017 – ODEQ requested clarification from U.S. EPA Region 6 on:
 1. Reporting of CMS Downtime
 2. Calculation of an Hourly Average
- June 26, 2017 – U.S. EPA Region 6 responded to ODEQ (in coordination with OECA & OAQPS)

Hourly Validation Example

①

Minute	Value
0	2
1	2
2	3
3	2
4	3
5	2
6	PURGE
7	PURGE
8	PURGE
9	PURGE
10	3
11	4
12	3
13	3
14	3

Average	2.73
Valid	12
Invalid	4
Quadrant	Valid

②

Minute	Value
15	4
16	PURGE
17	PURGE
18	PURGE
19	PURGE
20	4
21	25
22	35
23	30
24	25
25	5
26	PURGE
27	PURGE
28	PURGE
29	PURGE

Average	18.29
Valid	7
Invalid	8
Quadrant	Valid

③

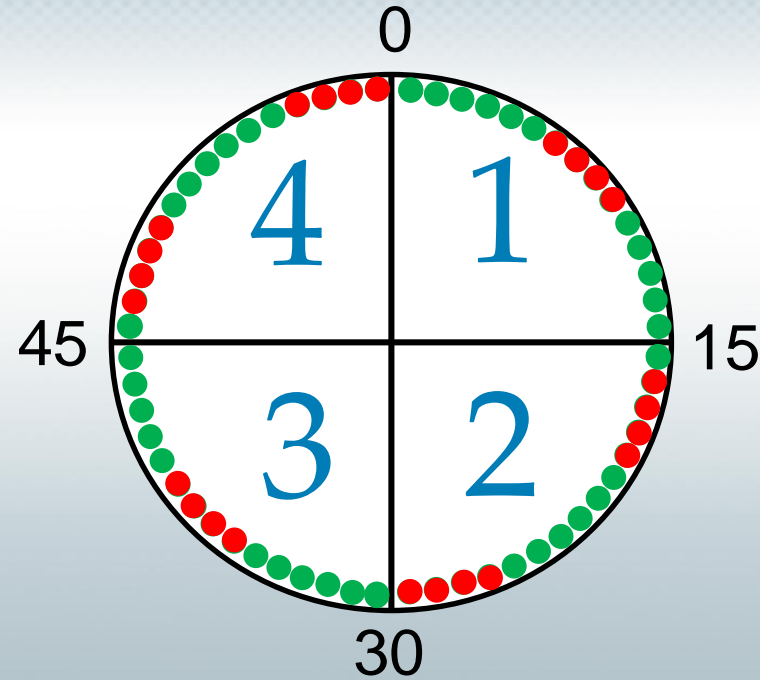
Minute	Value
30	2
31	3
32	4
33	2
34	3
35	3
36	PURGE
37	PURGE
38	PURGE
39	PURGE
40	3
41	2
42	3
43	2
44	2

Average	2.64
Valid	12
Invalid	4
Quadrant	Valid

④

Minute	Value
45	4
46	PURGE
47	PURGE
48	PURGE
49	PURGE
50	4
51	3
52	3
53	4
54	4
55	3
56	PURGE
57	PURGE
58	PURGE
59	PURGE

Average	3.57
Valid	7
Invalid	8
Quadrant	Valid



The unit operated the entire hour, and there was no required maintenance or quality assurance activity conducted in this hour.

Your environmental compliance is *clearly* our business.

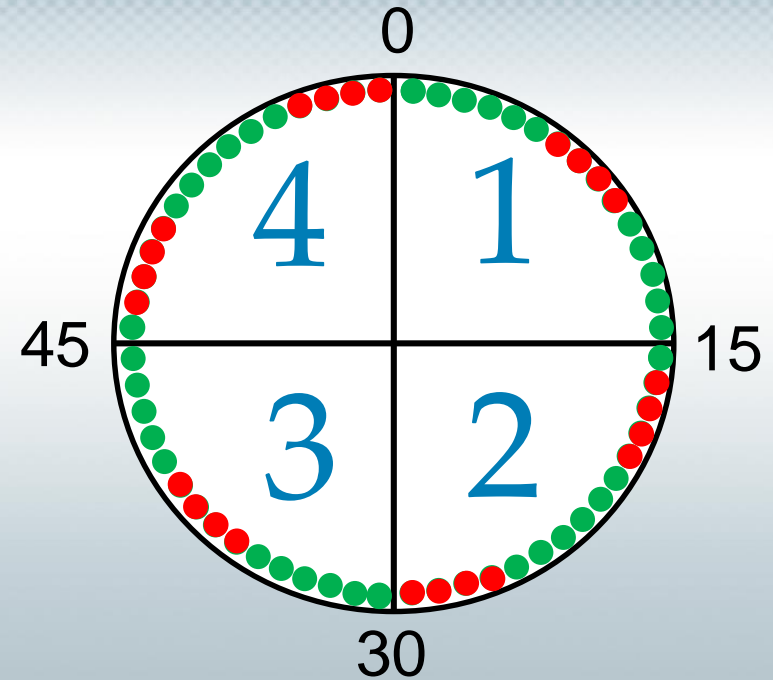
Hourly Validation Example

Current:

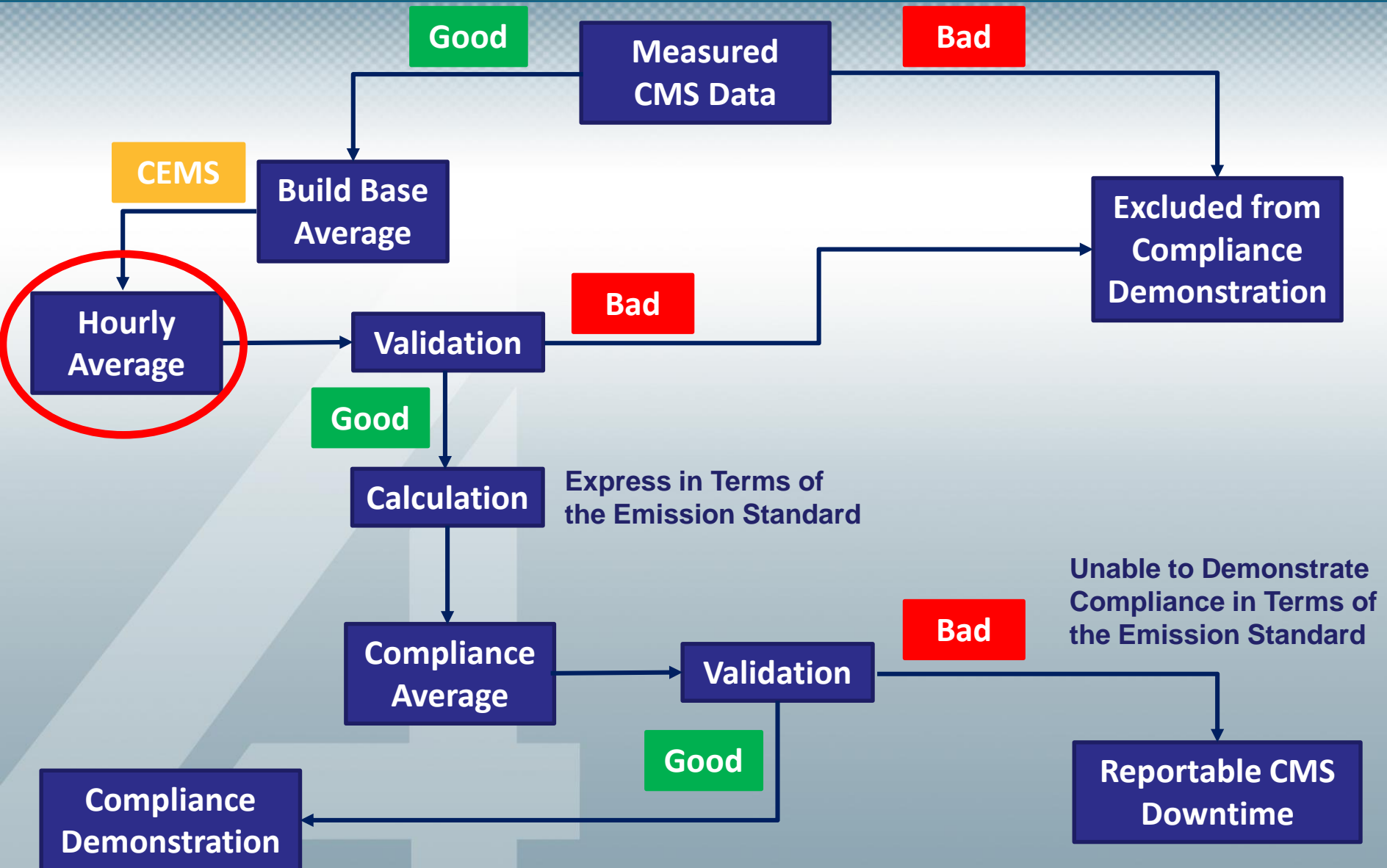
- ❑ Can a compliance average be calculated? **YES**
- ❑ Reportable CMS Downtime? **0 Hours or 0 %**

U.S. EPA Region 6 Guidance:

- ❑ Can a compliance average be calculated? **YES**
- ❑ Reportable CMS Downtime? **24 Minutes or 40 %**



Compliance Demonstration



U.S. EPA Region 6 Guidance

- April 18, 2017 – ODEQ requested clarification from U.S. EPA Region 6 on:
 1. Reporting of CMS Downtime
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ODEQ Request – Hourly Averages

- Hourly average based on:
 - 4, 15-minute quadrant averages collected during a clock hour OR
 - 60, 1-minute averages collected during a clock hour

- U.S. EPA Region 6 Response
 - Using the quadrant average “appears to be improper data reduction”

Hourly Validation Example

①

Minute	Value
0	2
1	2
2	3
3	2
4	3
5	2
6	PURGE
7	PURGE
8	PURGE
9	PURGE
10	3
11	4
12	3
13	3
14	3

Average	2.73
Valid	12
Invalid	4
Quadrant	Valid

②

Minute	Value
15	4
16	PURGE
17	PURGE
18	PURGE
19	PURGE
20	4
21	25
22	35
23	30
24	25
25	5
26	PURGE
27	PURGE
28	PURGE
29	PURGE

Average	18.29
Valid	7
Invalid	8
Quadrant	Valid

③

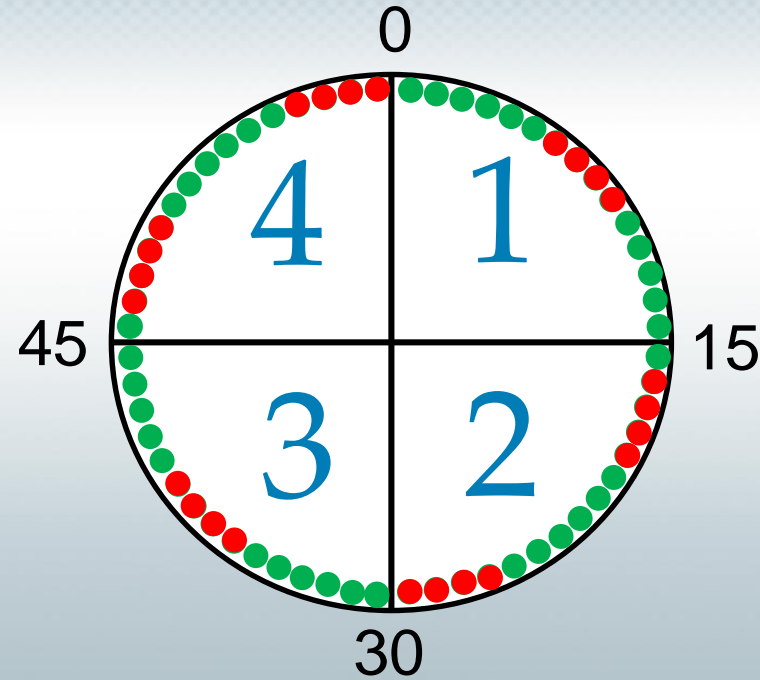
Minute	Value
30	2
31	3
32	4
33	2
34	3
35	3
36	PURGE
37	PURGE
38	PURGE
39	PURGE
40	3
41	2
42	3
43	2
44	2

Average	2.64
Valid	12
Invalid	4
Quadrant	Valid

④

Minute	Value
45	4
46	PURGE
47	PURGE
48	PURGE
49	PURGE
50	4
51	3
52	3
53	4
54	4
55	3
56	PURGE
57	PURGE
58	PURGE
59	PURGE

Average	3.57
Valid	7
Invalid	8
Quadrant	Valid



Methodology	Average
4, 15-min Quadrant	6.81
All valid minutes	5.89

The unit operated the entire hour, and there was no required maintenance or quality assurance activity conducted in this hour.

Your environmental compliance is *clearly* our business.

Additional Impacts

- ❑ Compliance
- ❑ Enforcement
- ❑ DAHS Vendors
- ❑ Reporting Procedures

Questions?



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