

# Advanced LIGO Engineering Change Request (ECR)

**ECR Title: Adding HWS Channels to DAQ for new Cleaned HWS code Addition**

**DCC No: E2300133-v1**

**Date: May/11/2023**

**Requester:**

Camilla Compton

**Impacted Subsystem(s):**

TCS, CDS

## Description of Proposed Change(s):

Addition of 54 channels to the HWS IOC and DAQ at both sites.

Channels:

L1:TCS-{OPTIC}\_HWS\_CLEAN\_SPHERICAL\_POWER\_{X,Y,AVG}

L1:TCS-{OPTIC}\_HWS\_CENTER\_ESTIMATE\_{X,Y}

L1:TCS-{OPTIC}\_HWS\_{BEAM,CO2,RH}\_POS\_{X,Y}

For OPTIC: ITMX, ITMY, ETMX, ETMY.

These channels are already implemented at LHO (alog [68748](#) and [65966](#)).

Implementation is adding these channels to the HWS ioc on all 4 h1hws computers (method in [65966](#)), then updating the L1EPICS\_HWS.ini file and performing a DAQ restart.

The new cleaned code has not yet been installed or tested on live data at either site. We will test at LHO before pulling HWS code changes to LLO. In the meantime, the channels should be added so they are ready.

## Reason for Change(s) / Motivation:

These channels will let us pull new hws code developed by Huy-Tuong Cao with functionalities to estimate wavefront centers and filter unusually large gradients.

This will give us cleaner spherical power data to monitor test masses thermal changes.

Code: [https://git.ligo.org/HWS/hws-server/-/merge\\_requests/1](https://git.ligo.org/HWS/hws-server/-/merge_requests/1)

## Motivation / Projected benefit (check all that apply):

Increased Sensitivity

Decreased Glitch Rates

Re-engineering to cope with obsolescence

Re-engineering to cope with sourcing issues

Re-engineering for technology insertion

Re-engineering for life extension of aging components/subsystems

## Rough Estimated Cost (Materials, Supplies, Equipment):

n/a

# Advanced LIGO Engineering Change Request (ECR)

**Rough Estimated Labor (Hours only):**

1 hour

**Rough Estimated Schedule:**

During Tuesday Maintenance

**Schedule Impact Estimate:**

n/a

**Nature of Change (check all that apply):**

- Safety
- Correct Hardware
- Correct Documentation

- Improve Hardware
- Improve Software
- Improve/Clarify Documentation
- Change Interface
- Change Requirement

**Importance:**

- Desirable for ease of use, maintenance, safety
- Desirable for improved performance, reliability
- Essential for performance, reliability
- Essential for function
- Essential for safety

**Urgency:**

- No urgency
- Desirable by date/event: \_\_\_\_\_
- Essential by date/event: \_\_\_\_\_
- Immediately (ASAP)

**Impacted Hardware (select all that apply):**

- Repair/Modify. List part & SNs: \_\_\_\_\_
- Scrap & Replace. List part & SNs: \_\_\_\_\_
- Installed units? List IFO, part & SNs: \_\_\_\_\_
- Future units to be built

**Impacted Documentation** (list all dwgs, design reports, test reports, specifications, etc.):

**Impacted Software** (list all that apply):

# Advanced LIGO Engineering Change Request (ECR)

## Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the “Notes and Changes” metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required**: in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected**: in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s)**: in which case the caveat(s) are listed
- **TRB**: the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer’s (or designee’s) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB’s recommendation. Links to the TRB’s documentation (charge, memos, final report, etc.) are to be added to the “Related Documents” field for this ECR.
- **CCB**: a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB’s documentation (CR, etc.) are to be added to the “Related Documents” field for this ECR.

## Concurrence by Project Management:

Acknowledgement/acceptance/approval of the disposition is to be indicated by the electronic “signature” feature in the DCC entry for this ECR, by one the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer