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Project Title:	2022 Energy Code Pre-Rulemaking
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Document Title:	Marathon Petroleum Corporation Comments - Comments on the CASE Initiative for NR Steam Trap Monitoring
Description:	Re: Marathon Petroleum Corporation's comments on the Codes and Standard Enhancement (CASE) Initiative for NR Steam Trap Monitoring Related to the 2022 California Energy Code Update
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Marathon Petroleum Corporation
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Sacramento, CA 95814

July 17, 2020

California Energy Commission Docket Office,
MS-4 Re: Docket No. 19-BSTD-03
California Energy Commission 1516 9th St Sacramento, CA 95814
Electronic Submittal

Re: Marathon Petroleum Corporation's comments on the Codes and Standard Enhancement (CASE) Initiative for NR Steam Trap Monitoring Related to the 2022 California Energy Code Update

Marathon Petroleum Corporation (MPC) appreciates this opportunity to provide comments on the proposed NR Steam Trap Monitoring CASE Initiative presented by the California Statewide Utility Codes and Standards Team. MPC is a refiner, logistics provider and marketer of petroleum products in California. MPC through subsidiaries, owns and operates two refineries located in Northern and Southern California and numerous terminals and logistics facilities that may be impacted by the proposed standard. At the refineries, MPC operates company owned captive steam generating and utility systems with thousands of steam traps. Refinery steam systems use steam produced from waste heat systems, combustion of refinery fuel gas, and are only supplemented with purchased natural gas. In fact, the purchased natural gas may be utilized in applications in the refinery that do not involve steam generation.

The public outreach process to impacted industries needs to be improved

MPC was made aware of this proposed change and supporting report indirectly through a contractor and not through a public notification process. Since we only became aware of this on July 14th, this notice came very late relative to the July 17th deadline for comments. We also do not find this document posted in the docket related to the code update and yet that is the docket to which we are to submit comments. This process is opaque. Moreover, even though the report references refineries specifically, we are aware of no outreach made by the sponsors of the report to trade associations representing the oil industry. We recognize that this rulemaking is still in the pre-regulatory process at the CEC and the proposal is not endorsed by the CEC. We believe our industry brings an important perspective to the dialogue on this issue. To improve the outreach, we respectfully request both the CEC and the title24stakeholders group directly engage the oil industry on this initiative throughout the regulatory process.

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Company owned captive utility systems operated within refining and related facility fence lines are already well controlled and should be exempted from the proposed standards for steam trap monitoring

Energy costs are one of the largest costs at refining facilities and MPC already has proactive measures in place to manage and control the energy loss concerns that drive the basis for this prescriptive code addition. These measures include:

- Maintaining an internal refining guidance document that describes the expectations for maintaining steam systems. It is specifically written to address steam tracing and traps, and other steam leaks.
- Performing routine steam trap audits (minimum annually) and conduct timely repairs using company or 3rd party resources.
- Utilizing an internal software program called MaraTrap for tracking steam trap operating status, audit findings, and logs maintenance activity. The Martinez refinery is actively using this software, and Los Angeles is in development.
- Tracking and reporting steam trap key performance indicators (KPIs) to executive leadership annually to ensure continuous improvement.
- Documenting lost opportunity costs for energy related operational control variables. This includes steam losses from venting, boiler cycles, furnace and boiler efficiencies, and steam demand from key consumers.

The direct costs claimed within the code background are misguiding and low for the refining industry.

- The strainer hardware costs references are "$50 - $100 each" (p.6). MPC's experience is that the strainer hardware averages $350 each, plus labor which could be anywhere from $100 each (pre-manufactured connection) to $400 each (welded connection). With thousands of steam traps at our California refineries, this is a large cost burden.

- The additional requirements for FDD design, construction, and auditing are not adequately captured in the CASE report. For existing refinery steam traps, if one fails, a "replacement in kind" can typically be made by Operations staff directly responsible for the assets. This has a no-cost labor basis since Operations staff are on site 24/7. For a failed trap under this proposed code, each trap would now need to have engineering design and construction oversight. This adds a significant number of manhours and costs in order to add the strainer and FDD, as it would be processed through Engineering resources, require Planning and Scheduling to put it on a maintenance execution plan, deploy incremental labor by 3rd party craft

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contractors (boilermakers, instrumentation) to install the strainers, trap, and FDD, and another party to inspect and file paperwork regarding adequacy of the conversion. It is not unreasonable to estimate a minimum of 20 total incremental hours per steam trap at $150 per hour, for a total of $3,000 per trap conversion in additional labor.

The lifecycle benefits claimed within the code background are high for the refining industry.

- The average open-trap steam loss in the CASE report is 54 lb/hr. MPC agrees this value is reasonable based on information from 3rd party steam trap surveys.

- The Open Trap Energy Losses shown on p.56 do not reflect an energy comparison between a trap operating properly and a failed open trap. The analysis in the CASE report claims the energy loss is equal to the latent heat of vaporization for the fluid. In reality:
  - If the trap were functioning properly the energy returned to the boiler system would be at the conditions of the condensate. Assuming a typical condensate quality is saturated water at 20 psig, this is an enthalpy of 228 BTU/lb.
  - If the trap were failed open and venting to atmosphere, there is no condensate returned to the boiler system and the water replacement to meet steam demand is from raw water. Assuming a typical raw water quality is 40 psig at 60F, this is an enthalpy of 28 BTU/lb.
  - The incremental energy needed to satisfy the system demand is therefore (228 – 28) = 200 BTU/lb, not 878.7 BTU/lb as shown.

- This comparison assumes the steam in the failed trap scenario has already condensed and provided its latent energy to the process. Leaving the failed trap is flash steam and condensate with enthalpy of 228 BTU/lb. This is a valid assumption.

- Result - The energy benefits are overstated by roughly 4x.

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- Combining the understated direct costs with the overstated benefits results in a revised Table 28 that shows a poor benefit-to-cost ratio.

Measure	Benefits	Costs	Benefit-to-Cost Ratio
Steam trap monitoring and Strainer	~$1,100 per trap	$3000 /traps + lifecycle cost NPV = ~$6,000 per trap	~0.15

Again, MPC appreciates the opportunity to comment and looks forward to working with both the CEC and the utilities as this measure progresses. Because we have not had adequate time to review this proposal, we may submit additional or amended comments in the future to the docket. Please let me know if you have any questions. I can be reached at (916) 860-9378.

Miles Heller
Director, Policy and Regulatory Affairs