



# Pumped storage power plants

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Pumped storage hydropower (PSH) provides the largest form of energy storage in power grids, with 179 GW installed globally as of 2023.

What is Pumped Storage Hydropower? Pumped storage hydropower (PSH) is a type of hydroelectric energy storage. It is a configuration of two water reservoirs at different elevations that can generate ...

The World's Largest Battery You've Never Heard Of Hydropower energy storage, or pumped-storage hydropower (PSH), is the world's largest and oldest form of grid-scale energy storage.

During times of excess power and low energy prices, water is pumped to an upper reservoir for storage. When power or grid services are needed, water is released from the upper reservoir and flows down ...

Pumped hydroelectric storage (PHS) is the most widely used electrical energy storage technology in the world today. It can offer a wide range of services to the modern-day power grid, especially assisting ...

Pumped storage hydropower (PSH) is a form of clean energy storage that is ideal for electricity grid reliability and stability. PSH complements wind and solar by storing the excess electricity they create ...

Pumped-storage hydroelectricity (PSH), or pumped hydroelectric energy storage (PHES), is a type of hydroelectric energy storage used by electric power systems for load balancing.

The National Hydropower Association (NHA) released the 2024 Pumped Storage Report, which details both the promise and the challenges facing the U.S. pumped storage hydropower industry.

Water Batteries For Solar and Wind Power?How It WorksWorld's Biggest BatteryGravity Storage, Grid-ScaleFuture PotentialPolicy RecommendationsFurther ReadingLatest StatisticsPumped hydropower storage uses the force of gravity to generate electricity using water that has been previously pumped from a lower source to an upper reservoir. The water is pumped to the higher reservoir at times of low demand and

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low electricity prices. At times of high demand - and higher prices - the water is then released to drive a turbine ...See more on hydropower

```
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rgba(0,0,0,.05);padding:16px 20px;gap:10px;background:#fff}@charset
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.cico{height:auto}#serpvidans.vsacf .mc_vtvc_ban_lo{top:0;right:auto}#serpvidans.vsacf .mc_cwvc .mc_vtvc
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var(--smtc-gap-between-content-medium);display:flex;flex-direction:column;justify-content:space-between}#
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.mc_vtvc_title{color:var(--smtc-ctrl-link-foreground-brand-rest);font:var(--bing-smtc-text-global-body2);heig
ht:auto;display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}#serpvidans.vsacf .mc_cwvc
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.mc_vtvc_meta_block_area,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
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.mc_vtvc_meta_row{color:var(--smtc-foreground-content-neutral-primary);height:var(--mai-smtc-padding-car
d-default);font:var(--bing-smtc-text-global-caption1)}#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area .mc_vtvc_meta_row .mc_vtvc_meta_row_channel::before,#serpvidans.vsacf
.mc_cwvc .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row
.mc_vtvc_meta_row_channel::before,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area .mc_vtvc_meta_row .mc_vtvc_meta_row_channel::before,#serpvidans.vsacf
.mmlist .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row
.mc_vtvc_meta_row_channel::before{content:" . "}#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
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.mc_vtvc_meta_block
.mc_vtvc_meta_pubdate{color:var(--bing-smtc-foreground-content-neutral-tertiary);padding-bottom:0}.vsacf
.mc_cwvc .mc_vtvc_con_rc,.vsacf .mmlist .mc_vtvc_con_rc{display:flex}.vsacf .mc_cwvc .mc_vtvc_con_rc
.mc_vtvc_meta_w,.vsacf .mmlist .mc_vtvc_con_rc .mc_vtvc_meta_w{height:auto}.vsacf
.b_title{padding-left:0}.vsacf .b_title
.mmtitle{font:var(--bing-smtc-text-global-subtitle1-strong);margin-bottom:0}.vsacf .b_title .mmtitle
a::after{content:"";margin:5px 5px 0 0;border-top:2px solid
var(--smtc-foreground-content-neutral-primary);border-right:2px solid
var(--smtc-foreground-content-neutral-primary);background-size:7px
7px;width:7px;height:7px;transform:rotate(45deg);display:inline-block;margin-left:4px}#serpvidans.vsacf
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a{color:var(--smtc-foreground-content-neutral-primary)}#serpvidans.vsacf .cardless.mmlist
.mc_vtvc_con_rc,#serpvidans.vsacf .cardless.mmlist .mc_vtvc_th{height:auto}#serpvidans.vsacf
.vsb_tr_c.va_tt{margin:0}#serpvidans.vsacf .vtbc .mv_vtvc_play,#serpvidans.vsacf .vtbc
.mv_vtvc_play_ext{position:static}#serpvidans.vsacf .va_tt
.mc_vtvc_ban_lo{display:block}#serpvidans.vsacf
.mc_bc{width:auto;border-radius:var(--smtc-ctrl-badge-sm-corner);padding:var(--smtc-padding-ctrl-text-side)
var(--smtc-gap-between-content-xx-small)}#serpvidans.vsacf .rmts .mc_bc
ems{display:none}#serpvidans.vsacf a.vsb_tr_t{color:var(--smtc-foreground-content-neutral-primary)}.vsacf
.va_tt .vsb_tr_chd .mc_vtvc_th_dock.rmoverlay{height:36px}.vsacf .va_tt .vsb_tr_chd
.mc_vtvc_th_dock{height:92px;background:linear-gradient(180deg,var(--bing-smtc-background-ctrl-fade-on-i
mage-stop-0) 0%,var(--mai-smtc-background-ctrl-on-image-rest) 100%)}.vsacf .va_tt a.vsb_tr_t{padding:0
0;font:var(--bing-smtc-text-global-body-2-alt-strong)}.vsacf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_meta,.vsacf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_title{color:var(--mai-smtc-foreground-ctrl-on-image-rest)}.vsacf
span.vcmt_ctt{font:var(--bing-smtc-text-global-caption2);margin:var(--smtc-gap-between-content-xx-small) 0
0;height:16px}#serpvidans.vsacf .vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title
strong{font-size:14px;line-height:20px;display:unset}#serpvidans.vsacf .va_tt .b_sldrp
.slide:not(:first-child){margin-left:var(--smtc-gap-between-content-small)}#serpvidans.vsacf .va_tt
.vsb_tr_chd .mc_vtvc
.mc_vtvc_title{white-space:normal;display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}#se
rpvidans.vsacf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion{background-color:var(--bing-smtc-background-ctrl-neutral-rest);display:flex;justify-co
ntent:center;align-items:center;gap:4px;width:fit-content;height:auto;padding:8px 12px}#serpvidans.vsacf
.b_module_expansion_control .b_btnContainer .b_CompactExpansion
.b_CompactExpansionBtnText{font:var(--bing-smtc-text-global-caption1-strong);color:var(--bing-smtc-foregr
ound-ctrl-neutral-primary-alt-rest)}#serpvidans.vsacf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion .b_arrow{display:flex;margin:0;height:auto}#serpvidans.vsacf
.b_module_expansion_control .b_btnContainer .b_CompactExpansion .b_arrow
path#Shape{fill:var(--bing-smtc-foreground-ctrl-neutral-primary-alt-rest)}#serpvidans.vsacf
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```
.b_module_expansion_control
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1px;background:var(--smtc-stroke-ctrl-on-neutral-rest)}#b_results
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.vasac{padding:unset;margin:0}#b_results .b_ans.b_vidAns .vsa .b_attribution{padding-bottom:0}#b_results
.b_ans.b_vidAns .cardless .salink{margin:0}#b_results .b_ans.b_vidAns .mmlist
.mc_vtvc{margin-top:10px}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc
.mc_vtvc_meta{display:flex;flex-direction:column;justify-content:space-between;margin:0 10px 4px
12px}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_channel{color:#111}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_row_channel,#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area{color:#666}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area{bottom:0;height:unset}.b_dark .vsa.cardless
.mc_vtvc{background-color:unset}.mmtitle>a{display:block}.mc_fh{height:100%;border-radius:6px}.mc_tc_
bs{overflow:hidden}.mmlist .mc_vtvc .mc_vtvc_meta { padding: 12px 16px 16px 16px; } .mmlist .mc_vtvc
.mc_vtvc_meta_w { height: 112px; margin-top: -0px; } .mmlist .mc_vtvc .mc_vtvc_title { height: 44px;
line-height: 22px; margin-bottom: 0px; margin-top: 0px; } .mmlist .mc_vtvc .mc_vtvc_meta_block_area {
height: 40px; } .mmlist .mc_vtvc .vtmu, .mmlist .mc_vtvc .vtpl { bottom: 120px; } .mmlist .mc_vtvc_th_dock
{ height: 112px; } .mmlist .mc_vtvc_th .cico { height: 131px; }
.mc_vtvc{background-color:#fff;box-shadow:0 0 0 1px
rgba(0,0,0,.05);line-height:0;margin:0;position:relative;border-radius:6px;overflow:hidden}.mc_vtvc.noshado
w{box-shadow:none}.mc_vtvc_con_rc{border-radius:6px;overflow:hidden;position:relative}.mc_vtvc>a{colo
r:#71777d;display:block;text-decoration:none;width:100%}.mc_vtvc>a:focus::after{outline:2px solid
#00a89d;width:100%;height:100%;content:"";outline-offset:-2px;position:absolute;top:0;left:0}.mc_vtvc_th{ba
ckground-color:#d5d5d5;position:relative}.mc_vtvc_th
.cico{border-radius:0}.mc_vtvc_ban_lo,.mc_vtvc_ban_up{position:absolute;vertical-align:middle}.mc_vtvc_
ban_lo{bottom:0}.mc_vtvc_ban_up{top:0}.mc_vtvc_title{font-weight:normal;margin-bottom:11px;overflow:
hidden;color:#111;height:54px;line-height:18px}.mc_vtvc_title
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argin-top:-40px;padding:12px
8px;z-index:1}.mc_vtvc_actc{right:16px;bottom:16px;position:absolute;display:inline-block;z-index:1}.mc_v
tvc_act_sep{border-top:1px solid #d5d5d5;height:40px;margin:0 8px}.mc_vtvc_fh
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.b_topTitle{margin-bottom:8px}.mc_vtvc_htc{width:100%;height:100%;position:absolute;top:0;bottom:0;left
:0;right:0}.mc_vtvc_htb{width:100%;height:100%;background:rgba(0,0,0,.7);position:absolute;top:0;bottom:
0;left:0;right:0}.mc_vtvc_ht{width:100%;padding:0
16px;line-height:16px;color:#fff;text-decoration:underline;word-break:break-word;box-sizing:border-box;vert
ical-align:middle;text-align:center}.mc_vtvc_th_live_b{background-color:#c80000;color:#fff;display:inline-bl
ock;padding:2px 8px;font:11px/14px
Arial;border-radius:2px;text-transform:uppercase;height:15px;width:26px;position:absolute;left:8px;top:110p
x}.isvctrl .isv
```

```
.mc_vtvc_ban_up{left:0;right:initial}.mc_vtvc_ban_lo,.mc_vtvc_ban_up{right:0}.vt_text.b_lRight
.b_lLeft{margin:0      0      0      1px;height:14px;line-height:14px;padding:2px
8px;background:rgba(0,0,0,.75);border-radius:2px;font-weight:bold}.mc_vthtb{width:100%;height:100%;bac
kground:rgba(0,0,0,.7);position:absolute;top:0;bottom:0;left:0;right:0;display:table}.mc_vtht{width:100%;pad
ding:0
16px;line-height:16px;color:#fff;text-decoration:underline;word-break:break-word;box-sizing:border-box;vert
ical-align:middle;text-align:center;display:table-cell}.vt_text.b_lRight      .b_lLeft{margin:0      0      0
1px;height:14px;line-height:14px;padding:2px
8px;background:rgba(0,0,0,.75);border-radius:2px;font-weight:bold}.emptyStyleForDebuggingPurpose{top:0
}.emptyStyleForDebuggingPurpose{top:0}.mc_vtvc_center_play{width:32px;height:32px;background-size:c
ontain;position:absolute;margin:auto;bottom:0;top:0;left:0;right:0;box-shadow:none;border-radius:0}.mc_vtvc
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ne}.vt_onhv      .mc_vtvc_htb{display:table}.vt_onhv
.mc_vtvc_ht{display:table-cell}.mc_vtvc_center_play{display:inline-block}.vt_onhv
.mc_vtvc_center_play{display:none}.mc_vtvc      .vtmu,.mc_vtvc      .vtpl{bottom:163px}.vsarf      .mc_vtvc
.vtmu,.vsarf      .mc_vtvc      .vtpl{bottom:122px}.svarh      #mmcar      .mc_vtvc      .vtmu,.svarh      #mmcar      .mc_vtvc
.vtpl{bottom:137px}.svarht      #mmcar      .mc_vtvc      .vtmu,.svarht      #mmcar      .mc_vtvc
.vtpl{top:8px;left:8px}.mc_vtvc_center_play{background-image:url(data:image/svg+xml,%3Csvg%20width
%3D%2232%22%20height%3D%2232%22%20viewBox%3D%220%200%2032%2032%22%20fill%3D%22
none%22%20xmlns%3D%22http%3A%2F%2F%2F2000%2Fsvg%22%3E%0D%0A%20%20%20%20%3Cr
ect%20width%3D%2232%22%20height%3D%2232%22%20rx%3D%2216%22%20fill%3D%22black%22%
20fill-opacity%3D%220.6%22%2F%3E%0D%0A%20%20%20%20%3Cpath%20d%3D%22M14.2354%201
0.1923C13.2355%209.62986%2012%2010.3524%2012%2011.4997V20.5C12%2021.6472%2013.2355%202
2.3698%2014.2354%2021.8073L22.2356%2017.3073C23.2551%2016.7339%2023.2551%2015.2661%2022.
2357%2014.6926L14.2354%2010.1923Z%22%20fill%3D%22white%22%20fill-opacity%3D%220.9%22%2
F%3E%0D%0A%3C%2Fsvg%3E)}.mmlist      .mc_vtvc{margin:10px      1px      0}.mmlist
.mc_vtvc_con_rc{display:flex}.cardless      .mmlist      .mc_vtvc_con_rc{height:112px}.mmlist      .mc_vtvc
.mc_vtvc_meta{display:flex;flex-direction:column;justify-content:space-between;margin:0      10px      4px
12px;padding:0}.mmlist
.mc_vtvc_title{font-weight:400;font-size:16px;height:44px;line-height:22px;margin-bottom:0;margin-top:0;c
olor:unset}.mmlist      .mc_vtvc_meta_row{font-size:13px}.mmlist      .mc_vtvc
.mc_vtvc_meta_block_area{height:unset}.mmlist      .mc_vtvc      .vtmu,.mmlist      .mc_vtvc
.vtpl{bottom:8px}.cardless      .mmlist      .mc_vtvc{box-shadow:none}.cardless.mmlist
.mc_vtvc_center_play{width:32px;height:32px}.cardless.mmlist
.mc_vtvc_title{font-size:16px;color:unset}.cardless.mmlist
.mc_vtvc_meta_row{line-height:20px}.cardless.mmlist
.mc_vtvc_meta_pubdate{padding-bottom:2px;color:#666}.cardless.mmlist      .mc_vtvc_th,.cardless.mmlist
.mc_vtvc_th      .cico,.cardless.mmlist      .mc_vtvc_th      div.rms_img{border-radius:6px}.cardless.mmlist
.mc_vtvc_th{height:111px}.cardless.mmlist
.mc_vtvc_htc{border-radius:6px;overflow:hidden}#serpvidans.vasac.cardless{box-shadow:none}.cardless.m
mmlist      .mc_bc{padding:2px      8px;line-height:14px;border-radius:2px;font-weight:normal}.mmlist
.mc_vtvc: hover
```



```
.mc_bc_w .pivot{text-align:center;margin-right:1px;height:14px}.vsarr .mmgrid .mc_bc_w
.mc_bc{background-color:rgba(0,0,0,.75);opacity:1}.mmsi{height:16px;width:16px;position:relative;top:5px;
padding-right:var(--smtc-gap-between-content-xx-small)}.mmsi-microsoftnews,.mmsi-msn{top:3px}.vrhdata
{display:none}.mmgrid>div{width:197px;display:inline-block;margin-right:8px;margin-bottom:8px;box-shad
ow:0 0 0 1px
rgba(0,0,0,.05);position:relative;vertical-align:top;overflow:hidden;white-space:normal;border-radius:6px}.vs
arr .mmgrid>div,.vsarr1stbig .mmgrid>div{margin-right:8px;margin-bottom:8px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta{height:auto}#serpvidansrr .mc_vtvc
.mc_vtvc_title{display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}.mmgrid
.mc_tc{border:0}.vsa .mmgrid>div:nth-child(3n){margin-right:0}.vsa
.b_moreLink{padding-top:4px}#serpvidansrr
.mc_vtvc_meta_row{line-height:18px;font-size:100%;height:17px}.vsarr
.mmgrid>div:nth-child(2n){margin-right:0}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:128px}.vsarr1stbig .mmgrid>div:nth-child(2){margin-right:0}#serpvidansrr.uipolish
.mc_vtvc_meta_pubdate,#serpvidansrr.uipolish .mc_vtvc_meta_channel,#serpvidansrr.uipolish #vidans2
.b_videocard .video_metadata .video_source{color:#767676}#serpvidansrr #vidans2 .b_videocard
.video_metadata_container,#serpvidansrr #vidans2 .b_videocard .video_metadata_container
.video_metadata>h3{width:100%}@media(max-width:1362.9px){#serpvidansrr
.mmgrid>div{width:168px;height:206px}#serpvidansrr .mmgrid>div .cico,#serpvidansrr .mmgrid>div .cico
.rms_img{width:168px;height:100px}#serpvidansrr .mc_vtvc .mc_vtvc_meta{padding:12px}#serpvidansrr
.mc_vtvc .mc_vtvc_title{height:32px;line-height:16px;margin-bottom:16px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta_block_area{height:34px}#serpvidansrr
.mc_vtvc_meta_row{line-height:15px;font-size:13px;height:15px}#serpvidansrr
.mc_vtvc_meta_pubdate{padding-bottom:4px}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:114px}#serpvidansrr #vidans2 .b_videocard .videoPlayer,#serpvidansrr #vidans2 .b_videocard
.videoPlayer .cico,#serpvidansrr #vidans2 .b_videocard .videoPlayer .cico
.rms_img{width:343px!important;height:194px!important;margin-right:0} @media(max-width:1274.9px){#s
erpvidansrr .mmgrid>div{width:124px;height:164px}#serpvidansrr .mmgrid>div .cico,#serpvidansrr
.mmgrid>div .cico .rms_img{width:124px;height:76px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta{padding:8px}#serpvidansrr .mc_vtvc
.mc_vtvc_title{height:32px;line-height:16px;margin-bottom:12px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta_block_area{height:28px}#serpvidansrr
.mc_vtvc_meta_row{line-height:13px;font-size:11px;height:13px}#serpvidansrr
.mc_vtvc_meta_pubdate{padding-bottom:2px}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:96px}#serpvidansrr #vidans2 .b_videocard .videoPlayer,#serpvidansrr #vidans2 .b_videocard
.videoPlayer .cico,#serpvidansrr #vidans2 .b_videocard .videoPlayer .cico
.rms_img{width:256px!important;height:144px!important;margin-right:0}#serpvidansrr .maskthumb
.mc_bc_w{padding:8px 4px 4px 8px}#serpvidansrr.withsplitline
.mmgrid>div:nth-last-child(1),#serpvidansrr.withsplitline
.mmgrid>div:nth-last-child(2){margin-bottom:24px}#serpvidansrr.withsplitline .mmgrid{border-bottom:1px
solid #ecec; margin-bottom:16px}#serpvidansrr #vidans2 .b_videocard
.video_metadata{max-width:auto;padding:12px 16px}#serpvidansrr #vidans2
```

```
.b_videocard{margin-bottom:12px;box-shadow:0 0 1px rgba(0,0,0,.05),0 2px 3px
rgba(0,0,0,.1);border-radius:6px}#serpvindansrr .b_rich{padding-top:0}#serpvindansrr #vidans2
.videoPlayer{border-radius:6px 6px 0 0;overflow:hidden}#serpvindansrr #vidans2 .b_videocard
.video_metadata>h3{white-space:nowrap;overflow:hidden;text-overflow:ellipsis;-webkit-line-clamp:1;line-he
ight:15px;height:15px;font-size:13px;color:#000;margin-bottom:20px;font-family:"Arial",Helvetica,Sans-Seri
f;font-style:normal;display:block}#serpvindansrr.vsarr1stbig #vidans2 .b_videocard .video_metadata
.actionmenu{display:none}#serpvindansrr #vidans2 .b_videocard .video_summary,#serpvindansrr #vidans2
.b_videocard .video_source{line-height:15px}#serpvindansrr #vidans2 .b_videocard .videoPlayer
.vtbc{right:0}.vrhc line.nhvpv .pffvi,.vrhc line.nhvpv[data-tps="S"] .pffvt,.vrhc line.nhvpv[data-tps="M"]
.pffvt,.vrhc line.nhvpv[data-tps="L"] .pffvt{display:inline-flex}.vrhc line.nhvpv .vrhct.pffv
.vrhc{display:none}.vrhc line.nhvpv .vrhct.pffv
.player_ol{background:var(--mai-smtc-background-ctrl-on-image-hover);transition:background-color
.5s;display:flex;align-items:center;justify-content:center;padding:var(--smtc-gap-between-content-x-small);ga
p:var(--smtc-gap-between-content-x-small);box-sizing:border-box}.mc_vtvc_th img{transition:all .3s
ease-out}.nhvpv+.mc_vtvc_th
img{transform:scale(1.1)}.smtplayerhtml5{height:100%;width:100%;overflow:hidden}.smtplayerhtml5
video{min-height:100%;min-width:100%}.smtplayerhtml5
.videoplaying{background-color:#000}.smtplayerhtml5.hide{display:none}.pffvt{display:none;color:var(--ma
i-smtc-foreground-ctrl-on-image-rest);font:var(--bing-smtc-text-global-subtitle2-strong)}.pffvi{mask:url(/rp/ui
07wU6K7FR_inzG7DRbP1i8fGo.svg) center
no-repeat;mask-size:12px;background:var(--bing-smtc-background-card-on-image-default);width:20px;height
:20px;flex-shrink:0;align-self:flex-start}[data-tps="L"]
.pffvt{font:var(--bing-smtc-text-global-subtitle2-strong)}[data-tps="L"]
.pffvi{width:22px;height:22px;mask-size:16px}[data-tps="S"] .pffvt{font-size:0}[data-tps="S"]
.pffvi{width:24px;height:24px;mask-size:24px;align-self:center}.hvpv.h5s
.pffvt{display:inline-flex}.hvpv.h5s .vrhct.pffv .vrhc{display:none}.hvpv.h5s .vrhct.pffv
.player_ol{background:var(--mai-smtc-background-ctrl-on-image-hover);transition:background-color
.5s;display:flex;align-items:center;justify-content:center;padding:var(--smtc-gap-between-content-x-small);ga
p:var(--smtc-gap-between-content-x-small);box-sizing:border-box}.pffvt{text-decoration:underline}.vrhc
.vrhc{position:absolute;width:100%;height:35px;max-height:35px;bottom:0;left:0;padding:0;background:non
e;display:block;z-index:9}.vrhc .vrhc.hide,.vrhc .vrhc .vrhc
.hide{display:none}.vrhc{white-space:nowrap;text-overflow:ellipsis;overflow:hidden;display:inline-block;po
sition:absolute;max-width:240px;height:18px;line-height:14px;margin-left:8px;top:10px;left:0;right:0;border-
radius:2px;padding-right:8px}.vrhc div{display:inline-block}.vrhc
nt{color:#fff;font-size:11px;font-weight:bold;background-color:rgba(0,0,0,.75);padding:2px
8px;margin-left:0;top:0;box-sizing:border-box;position:relative}.vrhc
.ricons{position:absolute;right:8px;top:10px;left:auto;bottom:auto;height:18px;display:inline-block;cursor:poi
nter}.vrhc.icons_1 .vrhc{margin-right:27px}.vrhc.icons_2 .vrhc{margin-right:49px}.vrhc.icons_3
.vrhc{margin-right:79px}.vrhc .vrhc .vsb_tr_chd .vrhc.icons_1
.vrhc{margin-right:0}.vpb{position:absolute;display:block;bottom:0;left:0;height:4px}.vpb
div{position:absolute}.vpb .vrhc{width:0;background:#fff}.vpb
nt.test{display:none}.vpb.back{background-color:#999}.vrhc
```

```
.vrhol.npb{height:36px;max-height:36px}.vrhol
.vadda{width:22px;height:18px;padding:0;margin-right:0;margin-left:2px;bottom:0;position:relative;display:inline-block;z-index:1;background:rgba(0,0,0,.75);border-radius:2px;overflow:hidden}.vrhol
.vadda.hide{display:none}.vrhol .vadda .mc_vfaa{margin:3px 5px}.ricons .vol{float:left}.ricons
.adultFlag{float:right}.vol{width:22px;height:18px;bottom:0;margin-left:1px;margin-right:1px;position:relative;display:inline-block}.vol.hide,.vol
.hide{display:none}.vol
.bg{background:rgba(0,0,0,.75);border-radius:2px}.vol.bg,.vol
.nt{position:absolute;bottom:0}.vol
.vol.bg.volnb{border-radius:0 0 2px 2px}.vol .volsliderHandle.bg{border-radius:2px 2px 0 0}.vol
.volsliderHandle{height:70px;display:none;width:22px;float:left;bottom:18px;position:absolute;display:block}.vol
.nt .volsliderHandle.hide{display:none}.volsliderHandle
.vsb{height:54px;width:4px;background-color:#999;margin:9px auto
8px;position:relative;display:block;border-radius:2px}.volsliderHandle
.vsh{height:6px;width:14px;padding:9px 7px 9px 7px;margin:0
-12px;display:block;position:absolute;top:30px}.volsliderHandle .vsh.hide{display:none}.volsliderHandle
.vshi{height:4px;width:14px;background-color:#fff;border-radius:2px}.volMuteIcon{width:16px;height:14px;
margin:2px
4px;float:left}.volMuteHandle{width:22px;height:18px}.vo{background:url(/rp/fFZxBXEIP9WYOO0jhTaElyLhEVU.svg)
no-repeat}.vm{background:url(/rp/fsX-ZVd03wB2TL0vmQJxSp4U9vs.svg)
no-repeat}.vl{background:url(/rp/YXYMPC1Rry_XJGc7Yg8lR4B2eEs.svg)
no-repeat}.vf{background:url(/rp/NoslR4amKTs1zYxWy3laZN3HRk.svg)
no-repeat}@media(forced-colors:active){.vol{forced-color-adjust:none}.vrhc
.line .vt_vp,.vrhc.popout
.vt_vp,.vrhc.mousefollow
.vt_vp{position:absolute;bottom:0;border:hidden;padding:0;top:0;left:0;z-index:3}.vrhc
.hide{display:none}.vrh_clc .vt_vp,.vrh_clc .vrhc .vrhi,.vrh_clc .player_ol{cursor:pointer}.vrh_clc
.cico{border-radius:0}.vrhc{border:hidden;top:0;left:0;padding:0}.vrhc.mousefollow .vrhc,.vrhc.popout
.vrhc{background-color:#999}.vrhtpc.load
.player_ol{background:url(/rp/J_o2maogFDeUOsovPjL-ofEuxJ4.gif) center center no-repeat}.vrhc
.line .vrhc
.vrhi,.vrhc.popout .vrhc .vrhi,.vrhc.mousefollow .vrhc
.vrhi{position:absolute!important;border:hidden;z-index:2;padding:0;left:0;top:0}.player_ol{position:absolute
;width:100%;height:100%;bottom:0;border:hidden;z-index:7}.vrhc.popout,.vrhc
.line,.vrhc.mousefollow{border-radius:6px;overflow:hidden;display:table-row-group;background:none}.vrhc.p
opout,.vrhc.mousefollow{z-index:4;box-shadow:0 4px 4px rgba(0,0,0,.1),0 2px 80px rgba(0,0,0,.2)}.vrhc
.line{z-index:1;margin:0}.vrhc.popout,.vrhc
.line{position:absolute;top:0}.vrhc.popout{border:1px solid
#fff}.vrhc.mousefollow{position:fixed}.vrhcpc{position:relative;top:0;left:0;display:table-row}.vrhcpc
.vrhc{position:relative;overflow:hidden}.vrhc.hide{display:none}@keyframes
vh_fadein{from{opacity:0}to{opacity:1}}.vrhc.not(.hide){animation:vh_fadein 250ms}.vrhc
.line
img{color:transparent}.vrhc
.line.fullsize{height:100%}.vrhc,.vrhc.hover,.vrhc.link,.vrhc.active,.vrhc.visited{color:#000;text-decoration:none}
.vrhc.vrh_clc{cursor:pointer}a.hover-anchor{display:block;height:100%;width:100%;text-decoration:none}
.vrhstat{height:0;overflow:hidden}.vsb_tr_c{position:relative;width:100%;overflow:hidden;background:#1d
1b28;height:583px;margin-bottom:16px}.vsb_tr_c.tr_nh{height:294px}.vsb_tr_c
.mm_vrc h2,.vsb_tr_c
.mm_vrc .see_more{display:none}.vsb_tr_c
.mm_vrc>div{padding-bottom:20px}.vsb_tr_c
```

```
.vsb_tr_t{position:absolute;top:16px;left:160px;font:normal 16px/19px
"Arial",Helvetica,Sans-Serif;font-weight:700;color:#fff;z-index:1}.vsb_tr_c
.vsb_tr_t::after{width:17px;height:12px;display:inline-block;background-size:7px
12px;background-repeat:no-repeat;background-position-x:right;opacity:.7;content:""}.vsb_tr_c
.vsb_tr_t:hover::after{opacity:1}.vsb_tr_c .mm_vrc
.mc_vtvc{background-color:#585858;border-radius:6px}.vsb_tr_c .mm_vrc
.mc_vtvc_con_rc{border-radius:6px}.vsb_tr_c .vsb_tr_chd{position:absolute;bottom:0;width:100%}.vsb_tr_c
.onhov .mc_vtvc_ban_lo{display:none}.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_title{line-height:15px}.vsb_tr_chd .mc_vtvc_tot .mc_vtvc_meta_row,.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_meta_row a{color:#dadada}.vsb_tr_chd .grad_b{top:30%;height:auto}.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_meta_row{font-size:12px;line-height:16px;height:16px}.vsb_tr_chd .mc_vtvc_tot
.meta_pd_content{display:none}.vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title strong{font-weight:500}.vsb_tr_c
.slide video{object-fit:cover}.vsb_tr_c .mc_vtvc_th .cico{width:100%;height:100%}.vsb_tr_c
.vrhcac{width:647px;position:absolute;width:calc(42% - 160px);bottom:200px;margin:0 0 0
160px;height:auto;padding:0;pointer-events:auto}.vsb_tr_c .vrhcac .mc_vtvc_title{font:normal 30px/35px
"Arial",Helvetica,Sans-Serif;font-weight:700;height:70px;overflow:hidden;color:#fff;text-overflow:ellipsis;di
splay:-webkit-box;-webkit-box-orient:vertical;-webkit-line-clamp:2}.vsb_tr_c .vrhcac
.mc_vtvc_meta_block_area{height:50px;margin:12px 0 0 0}.vsb_tr_c .vrhcac
.mc_vtvc_meta_row{font:normal 13px/15px "Arial",Helvetica,Sans-Serif;margin:5px 0 5px
0;color:#dadada}.vsb_tr_c .mm_vrc .b_overlay .btn.bigrounded .cr>div,.vsb_tr_c .mm_vrc .b_overlay
.btn.bigrounded .cr>div:hover{background-image:url(/rp/qA6EopzJjTm5qQJvnXlrWGNP778.svg)}.vsb_tr_c
.vsb_tr_t::after{background-image:url(data:image/svg+xml,%3Csvg%20width%3D%227%22%20height%3D
%2214%22%20viewBox%3D%220%200%207%2014%22%20fill%3D%22none%22%20xmlns%3D%22http
%3A%2F%2F%2F2000%2Fsvg%22%3E%0D%0A%20%20%20%20%3Cpath%20d%3D%22M0.186925%2
01.19491L5.4643%207L0.186925%2012.8051C-0.0623082%2013.0792%20-0.0623082%2013.5214%200.18
6925%2013.7944C0.436158%2014.0685%200.838112%2014.0685%201.08628%2013.7944L6.81334%207.4
9465C6.93212%207.36515%207%207.18433%207%207C7%206.81567%206.93212%206.63485%206.8133
4%206.50535L1.08628%200.205616C0.837052%20-0.0685388%200.435097%20-0.0685388%200.186925%
200.205616C-0.0612477%200.479772%20-0.0623082%200.92192%200.186925%201.19491Z%22%20fill%
3D%22white%22%20fill-opacity%3D%220.7%22%2F%3E%0D%0A%3C%2Fsvg%3E)}.va_tt
.mm_vrc{padding:11px 2px 0 0}.va_tt .vsb_tr_t{position:relative;top:auto;left:auto;font:normal 18px/22px
"Arial",Helvetica,Sans-Serif;font-weight:400;color:#4007a2;z-index:auto}.b_dark .va_tt
.vsb_tr_t{color:#82c7ff}.va_tt .vsb_tr_tp,.va_tt .vsb_tr_tl{display:inline-block;margin-right:5px}.va_tt
.vsb_tr_chd{position:relative}.vsb_tr_c.va_tt{--va-st-padding-bottom:16px;height:auto;background-color:tran
SPARENT;margin-top:22px;overflow:visible;padding-bottom:var(--va-st-padding-bottom);margin-bottom:0}.va_
tt .mc_vtvc_ban_lo,.va_tt .vsb_tr_t::after,.va_tt .mc_vtvc:hover .mc_vtvc_center_play,.va_tt .vsb_tr_chd
.vt_onhv .mc_vtvc .mc_vtvc_meta{display:none}.va_tt .mc_vtvc:hover .mc_vtvc_ht,.va_tt .mc_vtvc:hover
.mc_vtvc_htb{display:table-cell}.va_tt
.mc_vtvc_htb{padding-top:50px;background:linear-gradient(360deg,rgba(0,0,0,.6) 60.35%,rgba(0,0,0,0)
100%);font-size:11px;line-height:13px}.va_tt .mc_vtvc_ht{padding:0 24px;text-shadow:0 1px 2px
rgba(0,0,0,.2)}.va_tt .mc_vtvc_center_play{bottom:52px}.va_tt .mc_vtvc:hover
.mc_vtvc_title{max-height:52px;white-space:normal;display:-webkit-box;-webkit-box-orient:vertical;-webkit-
```



# Pumped storage power plants

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line-clamp:4}#serpvidans .va_tt .slide{margin-right:0;vertical-align:bottom;transition:width .2s,height
.2s}#serpvidans .va_tt .slide:not(:first-child){margin-left:8px}#serpvidans .va_tt
.mm_vrc>div{padding-bottom:0}.va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_meta{height:auto;padding:8px;color:#ddd}.va_tt .vsb_tr_chd
.mc_vtvc_th_dock{height:72px;position:absolute;bottom:0;background:linear-gradient(360deg,rgba(0,0,0,.55)
60.35%,rgba(0,0,0,0) 100%)}.va_tt
.mc_vtvc_meta_row_channel{font-size:13px;line-height:15px;font-weight:500;color:#fff;white-space:nowrap;
overflow:hidden;text-overflow:ellipsis;margin-bottom:6px}.va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_title{height:auto;font-size:11px;line-height:13px;color:#ddd;white-space:nowrap;overflow:hidden;t
ext-overflow:ellipsis}.va_tt .slide .mc_vtvc{width:100%}.va_tt .slide video{object-fit:cover}.va_tt
.mc_vtvc_th .cico{width:100%;height:204px}.va_tt .b_overlay
.btn.bigrounded{top:auto;bottom:0;margin-bottom:93px}.va_tt .vt_onhv
.mc_vtvc_htb{padding-top:86px}.va_tt .vsb_tr_chd .mc_vtvc .vtmu,.va_tt .vsb_tr_chd .mc_vtvc
.vtpl{bottom:6px}.va_tt .vcmt_ct,.va_tt .vcmt_ctt{display:block;margin-bottom:4px;font-size:11px}.va_tt
.vasyt::before{content:"";background:url(
AAAYCAYAAADgdz34AAABRkIEQVR4Ae2UT0rDQBjFX7QICtaoIOimAReiUNuV696jmx5A8AalZ/AIpb
bdwIT2B6wqIWYkuWgnBP7jo+D7SkcmiM4kd6KYPfjNDeHlfJt8kwEYOBXqhgENOd+SGnJKQ7JFjsr3k/j
mZkg/yQn7IE7IncAwjvEImRHICskKzQMdjuOZWsrcWNS7hX+dmgQurNQzxD52YBQ6s1maTb3UCtNsoo
TOzwI7THkXAYAD0+9narVyTR9aGtVoqpyRRqtdzNXls7qCCMqpWgXodqNVsrrkZ/ImiimMe6g4wHLqci
Qx6BzOXGwn93S7QaBQJF6Uy6B28Wq3y1HKSZC6uL7PAG1wFymSkG35FY/jX899Kfkxk6vE/JFIRrhvw
XJEH8r5C8Iw8kmudGyzbH037nI6Q9UnWu8i+eDnf38iamC7saVDkJG60Fv0CnB4IzftPhuMAAAAASUVO
RK5CYII=) no-repeat;background-size:18px 18px;padding-right:22px}.va_tt
.vasig::before{content:"";background:url(
AAAYCAYAAADgdz34AAAEsUIEQVR4Ad1UTWxUVRT+zn3vzbz5ozNtFQpRa2hDjC6qhKWICwjWTV
mwMRKIMSG44W9hXIGRRKPRUMMCEySgidHEXFXjxkgJEU0ISEhEaItg0bZU7bTz99689+49nvem5SfT
hVt5yc3ce+ee7zvfD869wP/9o/sXm4bKxUaAfQ6bnVkt9GZNIawiuDpCmiM4MLDZwAKDmJNgJoKWGZ
O6ZZhPK0RHj44+O99GsGITuRhkzJkshwMF00ROwHM6hKzhCnjaREjFBCYmMHcDWYYmJSQKgbIQgi
7XIPXiEom9RKBcf1+X1gMF3USBZQjBk2sdPLY2h+6VTgJqSdYqybyVfWPGw9x4FeWxKiIhCY0FH9ZA
l7L2yt9vP0BQ0s2dHZJ5hxB05zReObIWvQMF/Jdv+uwMrrzMXo1g4BsNI29q42gK/J6SzGB8bH9zf4E/PqJ
MUyN/A79ZxVpMSHFWgKMmGGSGuTXIZBbvxi9BzYgm1+PK3vOJgQe7N4I3HsEuoFOIYht6Xu+E79+
dAXTX40t1iCQodkRI2yxR6xiEpNwFjBEsVmVTy6iY/d6rO5zURmwCcHbQTdknJe3i875FkHV6c5G4uI0
dNyva46Dz0EqX6u0GFNPzRG1T78HsQxUqAYOQXQAg6+/Nsj90h34TcRIASBUUWFatWJev0xDjIqcaZn
gKXPt9Bcb/4IxeK7wipjU+j84sdKL96AnqkKhrsGJCcNVIKI9oUaWojKKIuo4IMEcm6k6bZogj5A9uIazVU3j
jGPFNGbI7/5RkqfnYQKw4NorLnU6lGC4YohFK+nLlnkVqarOB5dOAvuKglA8dakMNVyfYZBOcuAbOTI
FWDsuqEO7e5+e2PsPt7BLQORY0WgVxKkktJvmAgg6a4xLNwqVqIk/AiKSXJMAxJnVEghRIJfXoniPC
hmQ1ZBNp+W5KCDlgYzmdgVqlgpqWkL91h8xoGRrbkwgNfgCrNU52RRS2YvnzsbNEJ67kGQvWbeSEkt
VHE9+ew3y4nlKIYIU0NrISibSj/6x9yk7fByZj98lff68KBD7tmxJjSPHU8sAaUWUUBPFaK22uQTf9DIPf
YLEy1NtZ1SaVD6PAP1A+9Dj09BmfbNjhbN0NPjqOxfzfz/G0my2Onf1WCyDMzYIFzeQVWscHsGtJz15N
1astmNL87Gbcna32bGqffAk5KbCQ5BdKzTYvEV8CXi7fhqSTG3BiXA02i+x7puwRcikgIoOtXObp5idKDr
4HVAsLJi8SzY5y8yyHYhLGLCuzLk9GzBqkNg0hv34noh5/YTFwnIjdOdzmC8JY8/E+YDFN95CByLx+Gu
3U/XC24PK/yRddvQx/+D2pWSRvdyhg1s12gg59Chl9mDKW1MzAO3cE1rWvobr6oHKPin4N8QocCUAk
T0RIbGZnoCd+I3NN8IwicqRdTSQqotNtBMgFw6qQH1JufoDcrNz7tPRzBfz3JehZI8BifODDeHUZNXAjJF

```

RtUNVipGyilNiWkmse6MvGjoaxnNTyN0NFV7172S3sstxML9nxBRL7I00c+my8BhmvwqZRJVovMKoSt  
CDgQsQV+xbNq1OmYoZLo6PzeGi+fwFJbz1IhJBeawAAAABJRU5ErkJggg==)

no-repeat;background-size:18px 18px;padding-right:22px}.va\_tt  
.vastt::before{content:"";background:url(  
1irY+ieoiKXYKZaniI3WIoqg4AMfhaAcCMJ93q2vwxODz6WnZnf7swQEUU0w6D1Wn7y4cOJO/sLL8c  
H8ps1ernCdYCueCoJm03iAyaLGWa3SstzDFg028BoBvnfdw4IW+r+hTgtLVUX67ZcBcjCKV0HEl/h0epT2c  
gT8lBAlyjt+KNNsHMLU3yhUUebH+xGwWx+JRjOKdutUk+53wZVCPLGvnj/f2ZCFchXh6RjDwYS1dnF  
LHo8XvZIMNVuE7PyD1SScATcHyqhuNevQt8H62BZHiaf6ZtXqegAAAABJRU5ErkJggg==)

no-repeat;background-size:contain;padding-right:20px}.va\_tt  
.vasfb::before{content:"";background:url(/rp/zvtkyPveEhrXqHA-euzAa983fpQ.png)  
no-repeat;background-size:contain;padding-right:20px}.vcmt\_ctt.vasyt::before{background-size:15px  
15px;padding-right:19px}.vcmt\_ctt.vasig::before{background-size:15px

15px;padding-right:19px}.vcmt\_ctt.vastt::before{background-size:contain;padding-right:17px}.vcmt\_ctt.vasf  
b::before{padding-right:17px}.mm\_vrc{padding:24px 32px}@media screen and  
(max-width:1022px){.mm\_vrc{margin:0}@media screen and  
(max-width:766px){.mm\_vrc{margin:0}.mm\_vrcc{padding:0 0 32px 0;margin-bottom:0}.mm\_vrcc  
h2{padding-bottom:20px}.mm\_vrcc h2 a{font-family:"Segoe  
UI",Arial,Helvetica;font-size:20px;color:#000;line-height:1.8px}.mm\_vrcc .b\_overlay

.btn{z-index:3}.mm\_vrcc .vrhc{z-index:2}.mm\_vrcc .mc\_vtvc\_th .cico{padding-bottom:0}#dg\_c  
.mm\_vrc,#dg\_c .mm\_vrcc{padding:8px 16px 0 16px}#dg\_c .mm\_vrcc .mc\_vtvc{width:100%}#dg\_c  
.mm\_vrcc a:hover{text-decoration:underline}.isvctrl .mm\_vrcc  
.slide{overflow:visible}.mm\_vrc{padding:16px 100px 0 160px}.mm\_vrc .b\_overlay  
.btn.bigrounded.next{right:-44px}.mm\_vrc .b\_overlay .btn.bigrounded.prev{left:-44px}.mm\_vrc .b\_overlay  
.btn.bigrounded .cr>div,.mm\_vrc .b\_overlay .btn.bigrounded  
.cr>div:hover{box-shadow:none;border-radius:0;margin:0;background-position:16px

9px;background-size:12px  
22px;background-color:transparent;background-image:url(/rp/rKVnxf6wkbxI0DBa2Au3IVC5Sog.svg)}.mm\_  
vrc .b\_overlay .btn.bigrounded .cr>div{opacity:.7}.mm\_vrc .b\_overlay .btn.bigrounded  
.cr>div:hover{opacity:1}.mm\_vrc h2

a{font-family:"Arial",Helvetica,Sans-Serif;font-style:normal;font-weight:500;color:#111}.mm\_vrc  
h2{display:inline-block;padding-bottom:16px}.mm\_vrc>div{position:relative;padding-bottom:32px}.mm\_vrc  
.see\_more{position:absolute;right:0;top:3px}.mm\_vrc

.see\_more>a{font-family:"Arial",Helvetica,Sans-Serif;font-style:normal;font-weight:normal;font-size:16px;li  
ne-height:1.8px;color:#000}#vsb\_more{padding:16px 0 4px 160px;color:#111}#vsb\_vid\_cat .mm\_vrc h2  
a::after{display:inline-block;margin-left:12px;content:"";background-image:url(/rp/rKVnxf6wkbxI0DBa2Au3  
IVC5Sog.svg);background-size:7px 14px;width:7px;height:14px;opacity:.7}#vsb\_vid\_cat .mm\_vrc h2  
a:hover::after{opacity:1}.mm\_vrc .mm\_vrc\_sub{display:inline-block;margin-left:24px}.mm\_vrc

.b\_hList{position:absolute;height:20px;top:3px;overflow:hidden}.mm\_vrc  
.b\_hList>li{padding-right:24px;padding-bottom:0}.mm\_vrc .b\_hList a{font:normal 13px/20px  
"Arial",Helvetica,Sans-Serif;color:#111}.mm\_vrc .mc\_vtvc\_tot .mmsts  
.mc\_vtvc\_meta{display:none}.vsb\_tr\_chd .mc\_vtvc .mc\_vtvc\_meta { padding: 10px 10px 10px 10px; }

# Pumped storage power plants

```
.vsb_tr_chd .mc_vtvc .mc_vtvc_meta_w { height: 190px; margin-top: -0px; } .vsb_tr_chd .mc_vtvc
.mc_vtvc_title { height: 150px; line-height: 15px; margin-bottom: 0px; margin-top: 0px; } .vsb_tr_chd
.mc_vtvc .mc_vtvc_meta_block_area { height: 20px; } .vsb_tr_chd .mc_vtvc .vtmu, .vsb_tr_chd .mc_vtvc
.vtpl { bottom: 198px; } .vsb_tr_chd .mc_vtvc_th_dock { height: 190px; } .vsb_tr_chd .mc_vtvc_th_dock {
height:
        60px;
        } .tr_bt
        .mc_vtvc_th
img { height:auto; width:100% } .grad_b { position:absolute; width:100%; top:30%; bottom:0%; background:linear-
gradient(180deg, rgba(48,44,39,0)
        0%, #302c27
        100%) } .mc_vtvc_th_dock { width:100%; background:#302c27 } .mc_vtvc_tot
.mc_vtvc_th { background-color:transparent } .vsadc
        .grad_b { top:81.8% } .mc_vtvc_tot
.mc_vtvc_meta { line-height:15px; position:absolute; bottom:0%; background:transparent } .mc_vtvc_tot
.mc_vtvc_meta_row { line-height:16px; font-size:12px; height:16px } .mc_vtvc_tot
.mc_vtvc_meta_row, .mc_vtvc_tot
        .mc_vtvc_meta_row
        a { color:#dadada } .mc_vtvc_tot
.mc_vtvc_title, .mc_vtvc_tot
        .mc_vtvc_title
        a { color:#fff } .vsadc
        .mc_vtvc_tot
.mc_vtvc_title { line-height:18px } .vsadc
        .mc_vtvc_tot
        .mc_vtvc_meta_row, .vsadc
        .mc_vtvc_tot
.mc_vtvc_meta_row
        a { color:rgba(255,255,255,.7) } .vsadc
.mc_vtvc_meta_pubdate { padding-bottom:2px } .vtdc_default { background:#302c27 } .vtdc_default_g { backgrou
nd:linear-gradient(180deg, rgba(48,2,39,0)
        0%, #302c27
        100%) } .vtdc_black { background:#111 } .vtdc_black_g { background:linear-gradient(180deg, rgba(17,17,17,0)
        0%, #111
        100%) } .vtdc_blue { background:#3a4e74 } .vtdc_blue_g { background:linear-gradient(180deg, rgba(58,78,116,0)
        0%, #3a4e74
        100%) } .vtdc_brown { background:#69423d } .vtdc_brown_g { background:linear-gradient(180deg, rgba(105,66,6
        1,0)
        0%, #69423d
        100%) } .vtdc_grey { background:#464646 } .vtdc_grey_g { background:linear-gradient(180deg, rgba(70,70,70,0)
        0%, #464646
        100%) } .vtdc_green { background:#324f32 } .vtdc_green_g { background:linear-gradient(180deg, rgba(50,79,50,0)
        )
        0%, #324f32
        100%) } .vtdc_orange { background:#8c5400 } .vtdc_orange_g { background:linear-gradient(180deg, rgba(140,84,
        0,0)
        0%, #8c5400
        100%) } .vtdc_pink { background:#a3394b } .vtdc_pink_g { background:linear-gradient(180deg, rgba(163,57,75,0)
        0%, #a3394b
        100%) } .vtdc_purple { background:#774077 } .vtdc_purple_g { background:linear-gradient(180deg, rgba(119,64,1
        19,0)
        0%, #774077
        100%) } .vtdc_red { background:#811515 } .vtdc_red_g { background:linear-gradient(180deg, rgba(129,21,21,0)
        0%, #811515
        100%) } .vtdc_white { background:#464646 } .vtdc_white_g { background:linear-gradient(180deg, rgba(70,70,70,0)
        )
        0%, #464646
        100%) } .vtdc_yellow { background:#755b00 } .vtdc_yellow_g { background:linear-gradient(180deg, rgba(117,91,
        0,0)
        0%, #755b00
        100%) } .vtdc_teal { background:#256868 } .vtdc_teal_g { background:linear-gradient(180deg, rgba(37,104,104,0)
        0%, #256868
        100%) } .cipt, .cipg, .cipa, .cipl, .ciptr, .ciplr { display:inline-block } .cipa, .cipl, .ciplr { cursor:pointer } .vab { vertical-ali
```

# Pumped storage power plants

```

gn:bottom}.vam{vertical-align:middle}.vat{vertical-align:top}.vabl{vertical-align:baseline}.vatt{vertical-align:top}.vatb{vertical-align:text-bottom}
evronDown12,
evronUp12{background:url(/rp/QKlTrqL25sGDqfRYQjkMWJWDeG8.png)
no-repeat;background-size:494px 58px;width:12px;height:12px} evronDown12{background-position:-372px 0} evronUp12{background-position:-372px -14px}@media(prefers-color-scheme:dark){#bpage.b_med
evronDown12{background-position:-386px 0}#bpage.b_med evronUp12{background-position:-386px -14px}}#bpage.b_drk
evronDown12{background-position:-386px 0}#bpage.b_drk
evronUp12{background-position:-386px -14px}.cipt,.cipl{margin-right:10px}.cipt .cico,.cipl .cico,.ciptr
.cico,.ciplr
.cico{border-radius:0}.b_action>.cipt,.b_action>.cipl{float:left}.ciptr,.ciplr{margin-left:10px}.sw_play{height:16px;width:16px}:not(.dc_aud_wrp)>.sw_play{background-image:url(
E6QAFKUAEEqYAD58AE6QAE6UAFKQAEqUAD6QAE6MAE6QAD6cAE6QAFaQAFKQAEqQAFKUA
EqQAFKUAEEqIAFKMAEEqMAE6MAD58AE6UAE6UAE6IAFKYAFKYAE6MaDJ//AAAAI3RSTIMAEG
Cfz+//XyCQj79vMEDfIKAWoK/vYL9gcHDPMM9QkK+fzHYYSkAAAEVSURBVHgBdZMFkuwwEPPV
k/ULx8nSMN7/jh/X1dUDKgjpyaTIZavqLUF6q2rTo5o24aoaRVkH9MNOkk1DD3QW8AzV7M/zAtLDNGby
qKA5k9+d58OkKPukZFjmU0/0Qf6PdeXGVcDu3wBQphcXpxH+vlioyhtyHRwLrWQeICCEzHyZvunlBmLI
mo0WtsEQQnZU2jMFQwg5cFTCgiGEGF8CBUMMGReGdCpvnG/xaT7Ennc3RFyaOMZlOu7LXLF2Q8GL
1tSyROMGx3/00aSzH1bEyznOUKYZcC/C+XVh2nJT6Yk+yd7giz3wV/LstS8NfvgTPCN0qVkofAk8A+th
MsnehzXQmqLmBVdqHXfz97JPkPa3ldP6DeOGDIAP873EAAAAAEIFTkSuQmCC);background-size:16px
16px}#slideexp0_1D6C5A .slide { width: 94px; margin-right: 20px; }#slideexp0_1D6C5Ac .b_slidebar .slide
{ border-radius: 6px; }#slideexp0_1D6C5A .slide:last-child { margin-right: 1px; }.b_sldr
.slide{box-shadow:0 0 0 1px rgba(0,0,0,.05)}.b_cards .cico,.b_slidebar .slide
.cico{border-radius:0}#b_content .b_wpt_container .l_ecrd_imgsetgrid.l_ecrd_imgsetgrid_actionlink
.l_ecrd_imgsetgrid_item .cico{border-radius:0!important}.b_sldr .slide.see_more{box-shadow:0 0 0
0 rgba(0,0,0,0)}.b_sldr .slide.see_more .carousel_seemore{border:0}.b_sldr
.slide.see_more:hover{box-shadow:0 0 0 0 rgba(0,0,0,0)}#slideexp0_1D6C5Ac { margin: -4px; }
#slideexp0_1D6C5Ac .b_viewport { padding: 4px 1px 4px 1px; margin: 0 3px; }#slideexp0_1D6C5Ac
.b_slidebar .slide[data-mini="1"] { display:none; }Videos of Pumped Storage Power PlantsWatch
video5:02How Pumped Storage Power Plants Work (Hydropower) saVRee164.7K viewsMar 14, 2019Watch
video0:40Pumped Storage Hydropower Plant - How it works Energy Encyclopedia10.8K viewsAug 30,
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Rockies15.7K viewsAug 21, 2023Watch full videoShort videospumped storage power plants00:40 00:12
00:06 00:11 TikTok01:56 See allWatch full video.b_imgcap_alttitle p strong,.b_imgcap_alttitle .b_factrow
strong{color:#767676}#b_results
.b_imgcap_alttitle{line-height:22px}.b_imgcap_alttitle{display:flex;flex-direction:row-reverse;gap:var(--mai-
mtc-padding-card-default)}.b_imgcap_alttitle
.b_imgcap_img{flex-shrink:0;display:flex;flex-direction:column}.b_imgcap_alttitle
.b_imgcap_main{min-width:0;flex:1}.b_imgcap_alttitle .b_imgcap_img>div,.b_imgcap_alttitle .b_imgcap_img
a{display:flex}.b_imgcap_alttitle .b_imgcap_img
img{border-radius:var(--mai-smtc-corner-card-default)}.b_imgcap_coll
.cicoll{width:180px;height:108px}.b_imgcap_coll .b_imagePair.wide_m.reverse>

```

# Pumped storage power plants

ner{ width:180px;margin:2px -190px 0 0;padding-bottom:0}.b\_imgcap\_coll .b\_imagePair.wide\_m.reverse{padding-right:190px}.b\_ci\_image\_overlay: hover{cursor:pointer}.b\_imgcap\_coll .b\_imgcap\_img ll\_OnePortrait a{display:inline-flex} ll\_OnePortrait a:nth-of-type(1) img{border-radius:6px 0 0 6px} ll\_OnePortrait a:nth-of-type(2){margin:0 0 2px;position:absolute} ll\_OnePortrait a:nth-of-type(2) img{border-radius:0 6px 0 0} ll\_OnePortrait a:nth-of-type(3){position:absolute;margin:55px 0 0 2px} ll\_OnePortrait a:nth-of-type(3) img{border-radius:0 0 6px 0}#b\_results .b\_snippetGobig h2 { width: calc(100% - 0px) !important; }Pacific Northwest National LaboratoryPumped Storage Hydropower | PNNLDuring times of excess power and low energy prices, water is pumped to an upper reservoir for storage. When power or grid services are ...

Storage hydropower plants, also called pumped storage plants, are facilities that produce electricity by storing water in an upper reservoir, then releasing it and running it through turbines at a lower level, ...

Discover how pumped storage hydropower enables grid stability and long-duration energy storage. Learn about PSH challenges and Worley's expert project support.

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