Transfer of Development Rights as a Coastal Resilience Strategy

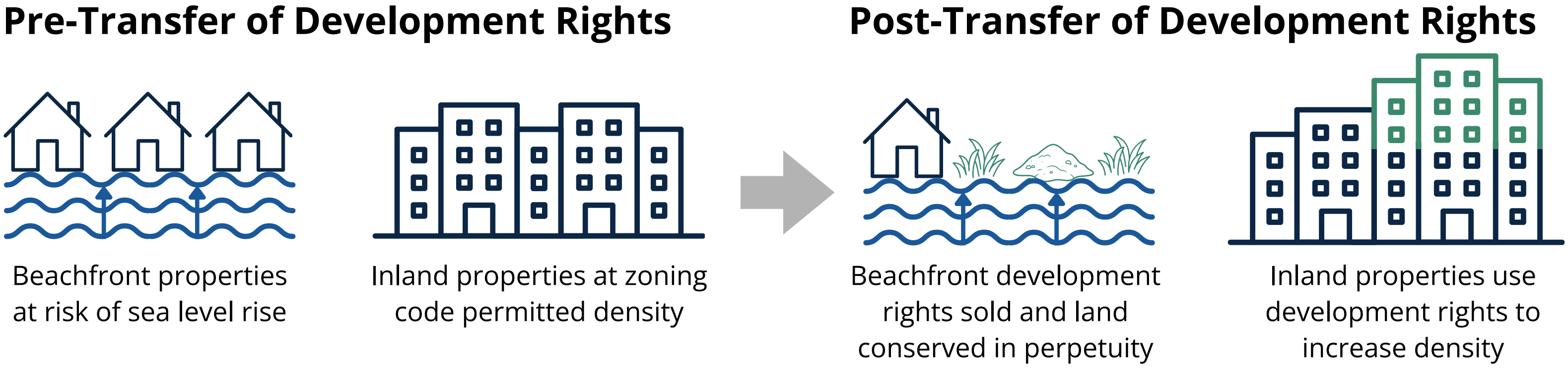
As sea levels rise, local governments are increasingly looking for a range of innovative funding techniques and land-use tools that can reduce coastal hazard risk, maintain housing supply, and support long-term community resilience. One option is a transfer of development rights (TDR) program (also known as a transfer of development credit or TDC program). TDR programs use market-based incentives to shift development away from at-risk shoreline areas toward safer inland locations that can support increased density.

Home hangs over the edge of a cliffside impacted by erosion near Palmetto Ave in Pacifica, California (Bronte Wittpenn, SF Chronicle)

This FAQ explains how a TDR program works, outlines how local governments can implement a TDR program in California's coastal zone as part of their sea level rise adaptation strategy, and presents examples.

What is TDR and why is it useful for sea level rise adaptation?

Transfer of development rights is a market-driven development management mechanism. It allows property owners in a designated "sending area," where development is discouraged due to sea level rise hazards, infrastructure limitations, or other reasons, to sell their development rights. Developers or property owners in "receiving areas," where a local government wants to encourage housing or mixed-use growth, can purchase these rights to build beyond the baseline zoning standards in a way that the TDR program would predetermine. In many cases, development rights are represented as transferrable development credits, where properties are assigned a certain number of credits in value that can be transferred. Once the development rights are transferred, the sending property is permanently protected from future development, typically through conservation easements or deed restrictions. TDR programs have typically been voluntary.



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TDR can be an effective tool for facilitating proactive retreat in areas at risk of sea level rise along the California coast. This approach reduces socioeconomic vulnerability to sea level rise, maintains or increases overall housing supply, reduces future public costs, and compensates property owners for reduced development potential. TDR programs also allow sandy beaches to naturally migrate inland and beachfront land to be protected, which in turn increases public access and recreational opportunities, protects coastal habitats and resources, and supports long-term coastal resilience.

Why and when should local governments consider TDR for sea level rise adaptation?

When communities have identified managed retreat as one of their sea level rise adaptation strategies and want a program that supports such retreat without decreasing overall housing supply, TDRs can be a practical tool. A successful program should align with local needs and priorities for both coastal adaptation and housing.

Economic incentives for TDR programs are most strong, and thus programs may be most effective, where there are:

- Coastal sending areas that are either **undeveloped parcels at risk from sea level rise or developed parcels losing economic value** due to erosion or flooding, and owners are seeking compensation or alternatives, and

- Inland receiving areas that have **strong demand for increased density.** These receiving areas can be located inside the same jurisdiction or outside of the jurisdiction (see the King County, Washington TDR program for an outside jurisdiction example).

If the jurisdiction does not have these factors (for example, if coastal property values are too high or development demand is too low for a program to effectively operate on its own), TDR can work in combination with other programs (such as buyouts, leasebacks, and lot retirement) to achieve similar goals.

Waves crash on the shore of Faria Beach in Ventura County, CA (Brian van der Brug, LA Times).

How can local governments create a TDR program?

1 Early Coordination with Coastal Commission
Coordinate early with the Coastal Commission (through our contacts page here) to help design the program, ensure alignment with the Coastal Act, and discuss how to incorporate the TDR program into the certified Local Coastal Program (LCP). The Land Use Plan (LUP) should generally identify TDR as an adaptation tool, and the Implementation Plan (IP) should provide program details, procedures, and requirements.

2 Identify and Assess Sending and Receiving Areas
Designate a defined sending area that is threatened by sea level rise and a receiving area where there is the ability and desire to accommodate more housing density. Sending areas are typically physical locations, while receiving are often specific zoning categories. Once chosen, the program must define how much acreage or floor area equals a TDR credit. Since this is the commodity that is sold, having clear definitions for what a credit equals, in both the sending and receiving areas, is essential.

3 Program Administration
The most successful TDR programs utilize the government as an intermediary between sellers and buyers, known as a "TDR Bank." Here, the free market dictates the price of credits, so sellers in sending areas can choose the price that they sell their TDR at based on demand from purchasers in receiving areas. Additionally, a TDR Bank allows a government to ensure that transactions meet program requirements and gives them the option to charge a transaction fee, the revenue from which can be used to run the program or finance other adaptation efforts.

4 Local and Commission Approvals for LCP Amendment
Once the initial details of the program have been outlined, the proposed program and associated LCP amendment will go through a public review and approvals process. This stage requires engaging with the community to both educate them on the program and integrate any feedback they have, then following the standard processes for local adoption and submittal to the Coastal Commission for certification of the LCP amendment.

5 Advertising and Monitoring
Ensure that property owners are aware of the program initially, so that there are trades in the TDR marketplace. Monitor and update the program design, if necessary, to attract as much participation as possible.


Surfers enjoy a restored beach at Surfers Point, City of Ventura (Brian Shah).

Are there existing coastal TDR programs in California that can help inform local government implementation?

Most TDR programs in the California coastal zone were created decades ago for objectives other than sea level rise adaptation. Still, much of their program structure and language remain relevant today and can be used to model sea level rise-oriented TDR programs. The following programs have all been approved by the Coastal Commission:

City of Oxnard

This program was designed to shift development away from subdivided beachfront lots that threatened public access and were subject to geologic hazards including shoreline erosion and coastal flooding, and geologic instability. It establishes a clear purpose and authority for the program, procedures, fee waiver incentives, and sending and receiving areas. It includes conservation easements, high credit ratios to incentivize transactions, and mechanisms for collecting fees, and fee waiver incentives. All of this is detailed in a chapter of the City's zoning ordinance, which also serves as the certified IP.

Los Angeles County

This program seeks to limit the individual and cumulative impacts in the Santa Monica Mountains that could result from subdivisions, multifamily development, and the potential buildout of existing parcels that are located in highly constrained areas. The major constraints include natural hazards, insufficient infrastructure, and adverse impacts to ESHA and public access. The TDC program limits new coastal zone lots in the Santa Monica Mountains by requiring that each subdivision permit purchases one TDC for each new lot created, effectively placing an existing lot into a conservation easement. Since 1979, the program has retired over 1,200 lots containing habitat or in antiquated subdivision areas and created 1,600 acres of open space. This program demonstrates how a TDR program was implemented into an LCP.

Other TDR programs in the California coastal zone

The City of Pacifica's has many similarities with the City of Oxnard program. The City of Pismo Beach's shows how a TDR program can locally transfer density within a narrow zone consisting of a limited number of lots. The City of Malibu's was modeled after Los Angeles County's program and includes similar LUP and IP language. The County of Monterey's uses TDR as a compensation tool within Big Sur's scenic viewshed.

Protected and restored dune systems at Ocean Beach, City and County of San Francisco (Brian Shah).